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PSHS-Eastern Visayas

Science for the People

SFTP in NSTW

Funny but it seems we always wind up with acronyms. The ABCs and the XYZs sometimes go with the 123s and we see K-12, R2D2, and C3PO; and even contractions such as str8, b4u, 2nite, and l8r, among others.

This interesting play of letters and numbers may also represent the diversity of topics presented in the 2017 NSTW focusing on SFTP. Yes, the acronym means National Science and Technology Week and Science for the People, respectively, held last July 11 to 15 at the World Trade Center and Philippine Trade Training Center in Pasay City. In its most serious sense, the NSTW, which is the biggest annual event organized by the Department of Science and Technology (DOST), aims to give the public a unique experience on how science and technology (S&T) work for a better life. In fact, DOST Secretary Fortunato T. de la Peña said, "We celebrate the National Science and Technology Week annually to showcase the services and products of our scientists, engineers, researchers, inventors, and innovators."

As to this year's theme "Science for the People", it emphasizes the commitment of the department in pursuing the administration's directive that all Filipinos should have equal opportunities. It also tells of the continuing initiatives to bring S&T closer to more communities. Such were reflected in one of the exhibit areas mounted by the regional offices that clustered products and services into the three island groups of Luzon, Visayas, and Mindanao. Here, one of the department's flagship programs, the SETUP or Small Enterprise Technology Upgrading Program, was configured with the help of taglines such as "Nangarap, Tinulungan, Umasenso" and the hashtag *#ScienceAndTechnologyPaMore*.

Also, there were interactive exhibits on different S&T related concepts offering a fun and exciting medium of learning ranging from photo booth, augmented reality devices, earthquake simulators, a gyroscope ride, and many more. This year's celebration was with a number of science museums which included the National Museum, Metamedia, Funlines, and the Philippine Science Centrum, among others.

For this issue of the S&T Post, the editorial team highlights the 2017 NSTW including the regional celebrations, some of which were already conducted while others are still underway. As of October, regional celebrations are still to be held in the Ilocos Region, Cordillera Administrative Region, SOCCKSARGEN, and Zamboanga.

The colorful celebrations, both in the national and regional levels, have been impressive that people came in droves despite the change in venue. For the more optimist of us, perhaps, we can say for now that interest in science and technology has started to be developed in that the Filipinos start to believe that S&T can truly be the driving forces for individual, societal, and even national development. This positive outlook might earn a not-so-welcoming arm from some but for those advocating for S&T, the warm air of belief overshadows the cold breeze of discontent. Now, a ray of hope can be seen from afar as many have been transformed as S&T advoc8s; and maybe 2moro, a new generation of Filipinos will embrace a culture of science.

Aristotle P. Carandang, LPT, MPS, Ph.D

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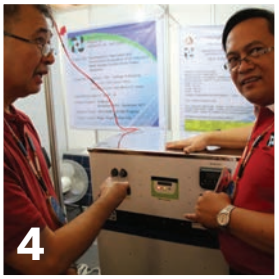


ABOUT THE COVER

DOST Sec. Fortunato T. de la Peña joins the fun at the 2017 Regional Science and Technology Week celebration with a group of Philippine Science High School-Eastern Visayas Campus students. The scene illustrates science and technology being delivered to and appreciated by those to whom science and technology are intended for. Science, at the heart of it, is for the people in this generation and the next. (Photo by Henry A. de Leon/ Design by Kimverlyn C. Sayson)

Secretary Fortunato T. de la Peña confers with Dir. Julius Caesar V. Sicat about the multi-voltage solar-powered generator.

Solar generator powers household

By MARITES BATAC, *DOST Reg.III*

A MULTI-VOLTAGE system solar-powered generator developed by a research team from Tarlac province successfully passed pilot test as it produced enough power to run common household appliances simultaneously. The generator, developed by Tarlac State University (TSU), was tested and launched by the Department of Science and Technology (DOST) in Brgy. Ungot, Tarlac City.

Professor Rodel Botio of the TSU research and extension office led the project which received funding from DOST Region III under its Grants-in-Aid (GIA) program. During the pilot test, the generator was able to power air conditioners, electric lights, a refrigerator, a television, and electric fans at the same time.

Prof. Rodel Botio (left) of TSU designed the solar-powered generator.

DOST Region III Director Julius Caesar V. Sicat expressed satisfaction with the results of the project, adding that similar collaborations are also ongoing with two other state universities in the region, namely the Aurora State College of Technology in Baler, Aurora and the Don Honorio Ventura Technological State University in Bacolor, Pampanga.

He said that DOST Region III will continue to support similar projects like these as he encouraged state universities and colleges in the region to contribute to the upgrading and modernization of the agriculture, industry, health, and environmental sectors to help improve the over-all productivity of the region.

The multi-voltage system solar-powered generator can provide alternating current of 220V and direct current of 12V with a rated power capacity of 8KW (8000W). Prof. Botio told that during its first month of trial run in a residential unit, the generator was able to bring down the homeowner's electricity bill from P6,000 to P1,500. A 1000W DC solar power unit was also successfully pilot tested in the home of a poor family in Brgy. Bantug in the Science City of Muñoz, Nueva Ecija to power up 6 electric light bulbs and one electric fan. The household is now 100 percent powered by solar energy.

Also present during the launch were Dr. Arthur Dayrit, assistant regional director of the Department of Agriculture; Engr. Romeolito Tacbian, provincial director of DOST Tarlac; Retired General Wilson Victorio of the Anti-Terrorism Council from the Office of the President; and Dr. Glenard Madriaga, vice president for research at TSU.

Through its GIA program, the DOST provides assistance to local government units and the academe to implement projects and conduct researches that will benefit marginalized people in the communities.

The TSU-developed solar-powered generator was on display at the 2017 Regional Science and Technology Week event at the Central Luzon State University, Science City of Munoz, Nueva Ecija.

Experts find 12 new species of PH lichens

By DAVID MATTHEW C. GOPILAN, *Philippine Journal of Science*
Photo by PAULINA BAWINGAN, PhD

LOCAL EXPERTS recently found 12 new species of lichens living in Philippine mountains. This finding was documented in the study "Philippine Species of Parmotrema (Ascomycota, Parmeliaceae)" published in the June 2017 issue of the Philippine Journal of Science.

The research team led by Dr. Paulina Bawingan reported 30 identified Parmotrema species, in which 12 are new records in the Philippines. While this does not indicate that the species are endemic in the country, it shows that our country has a rich lichen diversity that wants to be explored.

Given the Gratuity Permit by the Department of Environment and Natural Resources, Bawingan and her colleagues went to the forests of Benguet, Ifugao, and Mountain Province. They also studied collected species from Mt. Apo and Mt. Kitanglad through their partnership with Dr. Andrea Azuelo of Central Mindanao University. Collaboration with other universities enabled them to collect and identify other Parmotrema samples from Ilocos Norte, Pangasinan, Isabela, and Nueva Vizcaya.

Observations of the morpho-anatomic features and chemistry of these lichens were the bases for their identification. For one, the authors used microscopes to observe the features of the samples. They also used chemicals to "spot test" the samples. A spot test is done through dropping of specific chemicals on select parts of the lichens, causing them to change color or produce unique chemicals.

Meanwhile, foreign lichenologists like Dr. John Elix of Australian National University, also one of the authors, and Dr. Harrie Sipman of Freie University in Berlin, Germany had verified the new species.

"We were also able to meet foreign lichenologists who taught us to identify the lichens, [and] provided free consultation and reference materials," Bawingan revealed. Through her personal visits to herbaria and laboratories abroad, Bawingan said that she learned more about lichens, their importance and use aside from their taxonomy, or the science of naming and classifying organisms.

Lichens with pores

Parmotrema refers to the group of lichens with apothecia or pores. Lichens use apothecia to produce spores, their means for reproduction. Two Greek words are the roots of Parmotrema: "parmos" means "cup" and "trema" refers to "perforations".

These lichen species abound in the high altitudes of forest mountains in the country. They mostly grow on barks of trees and on rocks.

Thriving on barks

Parmotrema tinctorum represents the unraveled lichen diversity of the Philippines. There are 300 known species of Parmotrema lichens existing worldwide while its estimate in the Philippines is yet to be known.

Lichens are composite organisms that result from the symbiosis of a fungus and an alga or cyanobacterium or both. The alga or cyanobacterium uses sunlight to make nutrients while the fungus gives minerals, shelter, and water. For more than a century since the discovery of the two-way relationship in lichens, it was also discovered in 2016 that yeasts are living on the cortex or outer layer of the lichens. The yeasts make chemicals that would repel predators.

Known to be sensitive to atmospheric pollutants, lichens "can be used for atmospheric pollutant remediation," Bawingan said.

"Lichens in general, Parmotrema species included, possess unique compounds… Presently, I have PhD students doing research on antimicrobial and anticancer properties of lichens," Bawingan quoted.

Lichens are not exempted from threats of forest degradation. "We cut down the trees, we eliminate also the lichens. If we conserve the forest, we conserve the other organisms that use them as habitats," Bawingan added.

In their journal article, the authors wrote that they hope younger scientists will be encouraged to study the rich lichen diversity of the country.

The full article of "Philippine Species of Parmotrema (Ascomycota, Parmeliacaea)" can be downloaded for free in the PJS Volume 146 No. 2 at philjournsci.dost.gov.ph.

DOST's research centers to boost R&D, businesses in the regions

Text and photos by RODOLFO P. DE GUZMAN, *DOST-STII*

Innovation is at the heart of the many development programs of the DOST from agriculture to industry to health. DOST Secretary Fortunato T. de la Peña said that the DOST is now putting more resources into research and development by partnering with different stakeholders like state colleges and universities to serve as innovation hubs in the regions. At the recent Manila Tech Convention 2017, Secretary de la Peña pitched for the creation of R&D centers in the regions as support to research and innovation.

THE DEPARTMENT of Science and Technology (DOST) is strengthening further its research and development (R&D) programs to encourage more young innovators, particularly in the provinces, to come up with new products and services.

"The DOST, in line with the Duterte Administration's thrust of regional development, focuses on creating new R&D centers in the regions or niche centers for innovation," DOST Secretary Fortunato T. de la Peña said, "by providing grants, facilities, and leadership programs that are linked to industries."

Sec. de la Peña told this in his address before a crowd of young and tech savvy innovators during the recent Manila Tech Convention 2017.

The science chief revealed that DOST fosters strong partnerships with state colleges and universities that act as R&D centers and innovation hubs in the provinces where DOST matches the needs of the industries with the research institutions.

Secretary de la Peña further said that the DOST continuously works for convergence among stakeholders by supporting start-up businesses and linking them with business incubators and cooperators. He said that the DOST forges institutional collaboration with other government agencies like the Department of Trade and Industry (DTI) where DOST gives support in promoting innovation of start up businesses.

"The Philippine Council for Industry, Energy and Emerging Technology Research and Development of the

Senator Bam Aquino said that the activity to promote technological innovation is very timely because the trend worldwide is all about technology, and for the Philippines to be at par with other countries, it is imperative to develop more cutting edge technologies.

DOST has the Young Innovators Program that provides financial assistance to promising researchers. An example of this was the recent award given to a high school student who, I think, developed new software," de la Peña added.

On the other hand, Senator Bam Aquino, in his keynote address, said that the Senate fully supports the initiatives of the private sector and other government agencies in promoting innovation by crafting laws that will provide a more conducive landscape for growth and development of start-up companies.

"As a social entrepreneur myself, I have always supported start-up companies like the GoNegosyo program, and now we filed the Start-Up Bill that will provide financial grants and tax breaks to create an ecosystem that will make our start-ups competitive in the global market, like what happened in Silicon Valley and Israel," said Sen. Aquino.

The Senator also lauded the DOST for its trailblazing programs that address the need of emerging technologies that will enable the Philippines to be at par with other advanced countries.

"I commend the DOST for its programs like the Balik Scientist program, by advocating for the creation of the National Space Agency, and implementing programs to develop nuclear energy," Senator Aquino added.

DOST Secretary Fortunato T. de la Peña (right) talks about technological innovations during the Manila Tech Convention 2017 held at the SMX Convention Center, MOA, Pasay City on July 29, 2017. Secretary de la Peña said that the DOST is actively supporting the development of human resource capital of the country by expanding its scholarship grants for those taking up courses in science and technology, engineering, and mathematics. Secretary de la Peña also stressed the importance of convergence through partnership with other institutions like the one between DOST and the Department of Trade and Industry (DTI). The science chief was joined by (L-R) Jojo Flores, moderator; Usec. Nora K. Terrado of the DTI and Usec. Monchito Ibrahim of the Department of Information and Communications Technology.

Bamboo charcoal technology helps Pangasinan firm

By RIZALINA K. ARARAL, *DOST-FPRDI*

IN A bid to boost their town's economy, a company based in Bayambang, Pangasinan is set to go into large-scale charcoal making using bamboo. CS First Green Agri-Industrial Development made the decision after one year of piloting various machines from the Department of Science and Technology-Forest Products Research and Development Institute (DOST-FPRDI).

"We pilot-tested four kinds of equipment: the DOST-FPRDI bamboo charcoaling kiln, hydraulic briquettor, crusher, and drum kiln," said Levin Uy, company president. "Using bamboo wastes from our own plantations, we found that these technologies truly help create jobs, and can help Bayambang build a thriving bamboo industry," he added.

Uy mentioned that their sister organization, the Kasama Kita sa Barangay Foundation, has found the drum kiln especially useful for making charcoal using solid waste collected from the barangays.

According to DOST-FPRDI's Engr. Amando Allan Bondad, "The bamboo charcoaling kiln is a special kind of oven that churns out high quality charcoal for industrial uses. The drum kiln, hydraulic briquettor and crusher, on the other hand, are used for creating charcoal briquettes — solid charcoal that is easier to ignite, burns slower, and emits more steady heat than the ordinary kind."

The charcoaling kiln generates two products: high quality bamboo charcoal and industrial vinegar or pyroligneous liquor. A powerful cleaning agent, bamboo charcoal is widely used in industries to purify many kinds of substances – water, air, precious metals, alcoholic beverages, among others. It is also widely tapped in agriculture, and in pharmaceutics and cosmetics manufacturing.

Industrial vinegar, on the other hand, is a high-end product that comes from the kiln's collected and condensed smoke. In demand abroad especially in Japan, it serves as a disinfectant, bathroom deodorizer, and organic pesticide. It is commonly used in the medicine, cosmetics, and food processing industries.

Engr. Belen B. Bisana, chief of DOST-FPRDI's Bio-Energy and Equipment Development Section, said, "We are happy to work with a company that has its own bamboo plantation. Bamboo is not yet popularly used for charcoal in the Philippines, but it is an ideal material since it grows fast and can be re-harvested without harming the environment. The part of the plant that is used is the stem base, which is usually left behind after the poles are harvested."

According to Uy, "One year of field testing with DOST-FPRDI was encouraging to us. We saw the Institute's capacity to give good technical assistance, as well as the potential of bamboo in boosting the progress of our community. We look forward to getting to know other bamboo processing technologies which may prove useful to us."

The piloting of the bamboo charcoaling kiln was part of the recently concluded project "High Quality Charcoal from Bamboo for Industrial Uses." It was funded by the DOST-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development.

Call center agents prone to obesity, study says

By GERALDINE B. DUCUSIN, *DOST-STII*

A STUDY on call center agents finds that food intake and physical activity are associated with obesity. Interestingly, the same study also reveals that alcohol consumption, specifically beer, was consumed more by regular shift workers than by late shift workers.

Said study titled, "The Role of Alcohol Consumption, Food Intake, and Physical Activity on the Prevalence of Obesity Among Filipino Call Center Agents" was conducted by Patrick Venjoe R. Calingasan and his team from the Nutrition and Dietetics Department of the University of Sto. Tomas (UST). The team looked into three lifestyle factors among the 218 call center agents, specifically their alcohol consumption, food intake, and physical activity.

The study suggests that nutrition education on proper food choices and application of moderate physical occupation of shift workers could help improve the workers' health.

In another study on call center agents, "Partial Least Square Regression Modelling of the Factors Affecting the Risk for Obesity of Graveyard Shift Call Center Agents" by Richie Mae U. Abache and others, also from UST, studied 100 call center agents and found that 50 percent of them were obese. The study found an association between budget to eating pattern, eating pattern to total dietary intake, and budget to total dietary intake.

The Philippines' Business Process Outsourcing industry is estimated to bring in revenues of up to $24 billion by the end of the year, providing jobs for millions of Filipinos and significantly contributing to the country's economy. Thus there is a need to address the physical and psychological well being of workers in this sector, especially the call center agents.

The results of these studies were exhibited in the last 17th Conference of the Science Council of Asia, which was jointly organized by the Department of Science and Technology- National Research Council of the Philippines, the Science Council of Asia, and the Science Council of Japan.

DOST Secretary Fortunato T. de la Peña delivers his keynote message during the launching of Geo-Informatics for Systematic Assessment of Flood Effects and Risks towards a Resilient Mindanao or GEO-SAFER Mindanao. Geo-SAFER Mindanao Program will help Mindanao flood prone areas by providing detailed flood hazard maps. He added that this program is a very good example of showing that science is for the people as it provides timely information and appropriate action during the devastation of strong typhoons.

Engr. Meriam M. Santillan, program leader of GEO-SAFER Mindanao, explains how significant this two-year extension program of PHIL-LiDAR 1 to all flood-prone areas in Mindanao.

Schools to develop detailed flood hazard maps for Mindanao

By ALLAN MAURO V. MARFAL, *DOST-STII*
Photos by GERARDO G. PALAD, *DOST-STII*

THE DEPARTMENT of Science and Technology (DOST) and five Higher Education Institutions (HEIs) in Mindanao will be working together in developing detailed flood hazard information using state of the art Light Detection and Ranging (LiDAR) technology to enhance flood disaster management and mitigation in other highly flood-prone areas in Mindanao.

Launched on August 8 at LMX Convention Center in Butuan City, Geo-Informatics for Systematic Assessment of Flood Effects and Risks towards a Resilient Mindanao or GEO-SAFER Mindanao is a two-year extension program of Phil-LiDAR 1 Mindanao cluster.

Under this collaborative effort, with funding from DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development, the following universities: Ateneo de Zamboanga University, Central Mindanao University, Caraga State University, Mindanao State University-Iligan Institute of Technology, and University of the Philippines-Mindanao, will undertake research in order to develop flood modelling and impact assessment in all flood-prone areas in Mindanao which are not covered by Phil-LiDAR 1.

DOST Secretary Fortunato T. de la Peña reported that the Phil-LiDAR 1 program, which ended last June 2017, has provided detailed flood hazard maps to 71 river basins and flood prone areas and benefited 135 cities and municipalities in Mindanao.

However, according to Engr. Meriam M. Santillan, program leader of GEO-SAFER Mindanao, there are still many flood-prone areas in Mindanao that were not covered by the PHIL-LiDAR 1 program.

"In a unified response from various requests from different local government units in Mindanao, five HEIs involved in PHIL-LiDAR 1 proposed an expansion program to build and deliver Geo-Informatics Based Tools and Solutions in remaining flood-prone areas in Mindanao," said Engr. Santillan.

Engr. Santillan said that all the researchers, engineers, and scientists who are part of GEO-SAFER Mindanao program are envisioning a flood resilient Mindanao. The project will help save more than 21 million local residents and Mindanao's natural resources from possible devastation of various typhoons.

"Actually, we really cannot control disasters from knocking at our doors. However, we can mitigate its effects if we are aware and prepared. How can we be prepared? One way is by using the flood hazard maps," said Sec. de la Peña.

Sec. de la Peña explained that flood hazard maps of different rainfall scenarios are very useful during an impending flooding event. This is because the flood hazard maps are very detailed, reflect accurate information that can be relied on, and will help prepare people before flood reaches their doorsteps.

"We can identify which areas can be affected by the upcoming flooding; hence, we can prepare beforehand and mitigate the risks caused by flooding. Therefore, implementation of the Geo-SAFER Mindanao Program is a very good example of showing that science is for the people," said Sec. de la Peña.

Geo-SAFER Mindanao program is divided into three components. These are field survey, data processing, and flood modelling.

Meanwhile, the said launching was part of the recently concluded Regional Science and Technology Week in Caraga. Held August 8 to 13 at Robinson's Atrium in Butuan City, DOST, local private companies, state universities and colleges, and other HEIs have featured interactive exhibits on various research and development projects and innovative services. Aside from that, Regional Invention Contest and Exhibits or RICE, poster-making, and science writing contests were also staged during the week-long event.

DOST, Landbank set up lending program to commercialize inventions

Text and photos by RODOLFO P. DE GUZMAN, *DOST-STII*

DOST Secretary Fortunato T. de la Peña welcomes the partnership of the Technology Application and Promotion Insitute (TAPI) with the Land Bank of the Philippines (LBP) to provide an affordable lending facility for Filipino inventors to commercialize their inventions during the formal launch of the DOST-TAPI-LBP Innovation Technology Lending Program (I-TECH) on September 28, 2017 at the Philippine International Convention Center in Pasay City. Behind him are DOST-TAPI Director Edgar I. Garcia and DOST-TAPI Invention Development Division Chief Atty. Marion Ivy D. Decena.

FILIPINO INVENTORS and innovators will now be getting financial support from the Technology Application and Promotion Institute (TAPI) of the Department of Science and Technology (DOST) in partnership with the Land Bank of the Philippines (LBP) through the Innovation and Technology (I-TECH) Lending Program under the Invention Guarantee Fund (IGF).

This special lending facility, launched formally on September 28, 2017 at the Philippine International Convention Center, will assist entrepreneurial inventors and innovators in the commercialization of their inventions. This initiative is implemented in accordance to the provisions of Republic Act No. 7459, more popularly known as the Inventor and Invention Incentive Act of the Philippines.

The LBP, with more than four decades of rural financing experience, is an ideal partner of the DOST in helping inventors in their financial needs. Both institutions share the same goal of providing assistance to micro, small and medium enterprises (MSMEs) which include inventor-entrepreneurs particularly in the provinces.

According to DOST-TAPI, with I-TECH, it will be easier for inventors to get funding to bring their invention up to commercialization stage. For its part, DOST-TAPI will assist by creating a new program for business plan preparation.

"We welcome this partnership with the Land Bank of the Philippines because this will provide funding to inventors so that they can commercialize their inventions," said DOST Secretary Fortunato T. de la Peña. "So I have to give my advice to our inventors to come up with 'practical inventions' that our consumers can really use so that our inventors can be successful entrepreneurs."

This innovative lending facility provides an out-of-the-box financing package intended to serve patented Filipino inventors who want to commercialize their inventions provided through the facilities of the 4th largest universal bank in the country, the Land Bank of the Philippines.

The I-TECH Lending Program is unique as it shows the convergence of both the public and private sector working together to assist Filipino inventors in terms of financing business operations or projects within the Philippines, said Sec. de la Peña.

According to DOST-TAPI Director Engr. Edgar I. Garcia, the lending program will be a big help to inventor-entrepreneurs because they can avail of loans up to P 12.5 million or up to the repayment capacity of the borrower, whichever is lower.

The loan can be used by the inventor to acquire fixed assets, capital expenditures, production materials, and working capital. The term of the loan can vary from as short as 360 days promissory note, three years for permanent working capital or up to 10 years for fixed asset acquisition, capital expenditure, and production materials.

Also, the I-TECH program can extend special financing window to state colleges and universities with patented inventions and enterprises authorized by inventors to use their patents through a deed of assignment.

"What is more attractive in the I-TECH Lending Program is its very affordable interest rates of only 5% per annum for the Land Bank Internal Funds and zero interest for the TAPI-IGF portion of the loan," added Dir. Garcia.

According to LBP President Alex V. Buenaventura, the loan facility is very convenient for Filipino inventors because of the more liberal requirements. Such will open opportunities for them to invent more, he said. Buenaventura also added that the bank, together with DOST-TAPI, will help the inventors draw their business plans that would ensure the viability of their enterprise.

Land Bank, with 375 branches nationwide, 41 Lending Centers and 1,677 ATMs (as of 31 August 2017) will provide the needed boost for more inventors in all regions to avail of the financing facility. Land Bank has a total loan portfolio to MSMEs at P65 billion or 13% of its total loan portfolio recorded at P597 billion as of June 30, 2017.

"DOST is very confident that this program will truly help our Filipino inventors because it will now be easy for them to get funding for their inventions with the help of a very stable financial institution like Land Bank unlike before where there were limited means, so we are very optimistic that this lending program will be successful," concluded Sec. de la Peña.

Marine bio experts wage solutions to protect corals

Photo taken during the expedition of Philippine team of researchers to the Benham Bank. Courtesy of Dr. Hildie Maria E. Nacorda/UPLB-SESAM

By ROSEMARIE C. SEÑORA, *DOST-STII*
Photos courtesy of DOST-PCAARRD

MARINE BIOLOGISTS and experts recently put forward science-based solutions that address issues in coral protection in the country.

Dr. Wilfredo Roehl Y. Licuanan, in his talk entitled "Current Status of PH Coral Reefs and Prospects for the Near Future", recommended to "fix the reef first before transplant."

He spoke during the recent forum on National Coral R&D Program which highlighted the current status of the Philippine coral reefs, the importance of research for the conservation of corals, the exploration of our scientists and researchers of the Philippine Rise and its overall impact to the economy of the Philippines. Organized by the Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD), particularly the Marine Resources Research Division headed by Dr. Mari-Ann M. Acedera, the forum was part of the recent 2017 National Science and Technology Week celebration.

"Reefs do not form overnight. They take thousands of years to develop," he said adding that the coral reef crisis cannot be resolved by coral gardening as it is expensive and is not practical.

Coral gardening is the cultivation of corals for commercial purposes or coral reef restoration.

According to him, the method is also risky as instead of actually repairing the damaged coral reef, it might harm the reef even more.

Another sad reality, he said, is that 80% of the coral mortality is actually caused by various human activities and not natural calamities.

Take for example the case of the minesweeper ship USS Guardian that on January 17, 2013 ran aground on the south atoll of the Tubbataha Reefs, a delicate ecosystem in the Sulu Sea treasured for its rich marine biodiversity.

The grounding damaged 2,345 square meters of coral on the reefs, considered a World Heritage Site by the United Nations Educational, Scientific and Cultural Organization.

"The better thing to do is to take care of the remaining reefs," he said.

Dr. Patrick C. Cabaitan, also a speaker, discussed the topic 'Sexual Production of Corals and Why Sex is not Enough?'

(From left) Dr. Wilfredo Roehl Y. Licuanan, Dr. Patrick C. Cabaitan, Dr. Cesar L. Villanoy, Dr. Hildie Maria E. Nacorda and Dr. Mari-Ann M. Acedera, director of DOST-PCAARRD's Marine Resources Division.

Wilfredo R.Y. Licuanan, Full Professor VI, Biology Department and Shields Ocean Research Center of the De La Salle University discusses "The Current Status and Future Prospects for Philippine Coral Reefs."

Dr. Patrick C. Cabaitan, Assistant Professor of the UP Diliman-Marine Science Institute discusses the "Sexual Production of Corals."

He said that studying coral reefs is essential to the economy of the Philippines as they also provide for the ecotourism of the country. He emphasized that scientific intervention is an important tool in coral production.

"Corals reproduce through asexual and sexual means but sex is not enough for the corals," he said.

He suggested that researchers or anyone interested in studying corals pursue basic science to understand reefs; consider other ecological processes in conducting reef restoration efforts, and integrate restoration with management efforts.

Meanwhile, Dr. Cesar L. Villanoy, in his talk entitled 'Updates on the Oceanography of the Benham Rise', discussed his past researches and the importance of understanding the movement of the waters around the Philippines.

His researches addressed pressing concerns of the country particularly in fisheries, harmful algal blooms, storm surges, and other complex dynamics of archipelagic oceanography.

He said that it's vital to understand the movement of the waters and its temperature to be able to formulate policies with regards to management of the country's marine resources.

He also reminded everyone to always consider the processes that determine our physical environment in order to explain the ecology of organisms and the observed trends.

Dr. Hildie Maria E. Nacorda, in her talk entitled 'On the Benham Bank Biodiversity: Taking Learning to the Next Step', discussed the expeditions the Philippines has done to determine the economic potential of Benham Rise, now called the Philippine Rise.

Though the two expeditions done in 2014 and 2016 have discovered the existence of marine species in the Philippine Rise, Nacorda said that further studies are needed to fully understand the potential of the rise.

Initial findings of the nationwide assessment of Philippine coral reefs

In relation to this call to the public of the marine experts to help in the preservation of the remaining coral reefs, DOST and Department of Environment and Natural Resources are working on a coral reef assessment throughout the country to create a National Coral Reef Status next year.

This is because despite of the Philippines being well known for its species-rich coral reefs, there is a lack of updated information on the present status of its coral reefs.

The initial findings of the Nationwide Assessment of Philippine Coral Reefs by Licuanan, et al were published in the Philippine Journal of Science last June 2017.

Reefs sampled were randomly selected from around the country, with the number of assessment stations for each of six biogeographic regions stratified by the total area of reefs in each of these regions. For two years, 166 reefs have been sampled.

Based on live coral cover, more than 90 percent of the sampled reefs are in the poor and fair categories.

So far, the mean hard coral cover of the country at 22 percent is comparable with that of the Indo-Pacific region, but much lower than previous estimates for the Philippines.

These values indicate a marked decline in the condition of local reefs over the last four decades, thereby revealing the urgent need for the revision and update of conservation and management policies.

Fewer malnourished kids now in Bicol Region

By **ENGR. DOMINGO A. PEÑA, JR.**, *DOST-V*

TECHNOLOGY ADOPTORS in Region 5, in a recent forum, recognized the help of the Department of Science and Technology's (DOST) Malnutrition Reduction Program (MRP) in curbing malnutrition in their respective localities. Specifically, the adoptors thanked DOST-V and the DOST-Food and Nutrition Research Institute (FNRI) for technology assistance and funds to establish their respective facilities.

The adoptors, who were also awarded by DOST with plaques of appreciation, were Mayor Nelson P. De los Santos of San Lorenzo Ruiz, Camarines Norte; Mayor Madelaine Y. Alfelor of Iriga City, Camarines Sur; Municipal Councilor John Paul Erlano, Gubat, Sorsogon; Mayor Arturo B. Virtucio of Aroroy, Masbate; and Mayor Sharon Rose Escoto of Gubat, Sorsogon. The last two mayors received the plaques through Ms. Lorie Ibañez and Coun. Erlano respectively.

The local government chiefs said that the MRP, specifically the complementary food facilities, will augment their existing anti-malnutrition programs.

Mayor De Los Santos shared that the project is of great help to San Lorenzo Ruiz, a fifth class municipality. San Lorenzo Ruiz is also commissioning a pilot study to measure the impact of the town's self-produced complementary food blend used in its feeding program.

Meanwhile, Dr. Georgina J. Bordado, president of the Central Bicol State University of Agriculture (CBSUA), said that the project is integral to the research and extension function of CBSUA. Foremost, the project is a confirmation of research translated into practical action; that is, as solution to practical problems outside the ivory towers of the academe. CBSUA carried out product development of the rice-monggo crunchies, particularly in adding natural flavors to the product.

Iriga City, consistent awardee of National Nutrition Councils Best Performing City on Health, remained true to its advocacy of supporting the locals with nutritious and low-

tiwala-org.jpg

cost baby food blend and snack food. The city runs its facility supplemented with raw materials from its own organic farm. Mayor Alfelor emphasized that health and nutrition is a top priority of Iriga City.

The adoptors were convened by DOST-V in an activity titled "Project Updating and Consultative Meeting" held recently in Legazpi City. The two-day event served as a venue to clearly define the roadmap and strategies of the project, and to forge commitments to execute action plans.

Among the participants were FNRI Director Dr. Mario V. Capanzana and DOST-V Regional Director Tomas B. Briñas.

In his message, Capanzana was happy to personally meet the adoptors and underscored the importance of the foci goals of the MRP which underpin the establishment of the complementary food facilities.

The nutritional status of infants and children at the first 1000 days are crucial to the later stages of growth and development. Notwithstanding this, there are still gaps that need to be addressed in providing interventions in different age groups within this bracket. Foremost is to provide responsive intervention to the nutrition requirement of infants and children aged six months to three years. As Capanzana puts it, "Ang mabigyan ng tamang interbensyon sa tamang panahon."

Three central and important topics were discussed and shared with the participants. First, Jaypy De Juan, Science Research Assistant (SRS) II of DOST-FNRI revisited the project objectives and components as well as the agreements stipulated in the TLA. Highlighting DOST PINOY (Package for the Improvement of Nutrition of Young Children), a nutrition intervention strategy, along the technology component under MRP, Mr. De Juan shared the impact of DOST-led initiative to combat the country's plight on malnutrition.

Meanwhile, Licensing Officer III Mary Christine C. An provided the participants with a bird's eye view of regulatory powers of the Food and Drug Authority (FDA) and pertinent statutes and orders of importance to food regulation.

Officer An made the application process for license to operate (LTO) easier to understand through an infovideo. Guidelines for web-based application system were summed up to three quick steps: (1) prepare documents, (2) request for user account, and (3) apply for LTO through FDA official website e-portal. The collated hard documents should be scanned and uploaded following the prescribed specifications of documentary requirements, as discussed by An.

Social enterprise development expert Noemi A. Bonaobra of Socio-Economic Development Program Multi-Purpose Cooperative (SEDP-MPC) broke the ice by her engaging and buzzing discussion on topics from financial, supply, to market side of business operation and even tips on overcoming the pains of maintaining up-to-date record of cash flow. Bonaobra said that this kind of project is larger than mere business; it is a social enterprise.

The second day was devoted to the presentation of food safety assessment by the in-house Food Safety Team (FST) who made a series of visits and audits to the five complementary food facilities between February and March 2017.

Three of DOST-V FST members shared their experiences and learnings gained from the visits in Singapore. Ma. Theresa D. Alcantara, DOST-V Program Management Unit head and Regional Standards and Testing Laboratory officer-in-charge, mused that in Singapore even the street food vendors are required to undergo training and seminars related to food safety for them to engage in such business activity.

Vanessa SM. Caluza, SRS II, presented the general observations and findings, including non-conformance to current Good Manufacturing Practices of the established complementary facilities during the conduct of Food Safety Assessment. Meanwhile, Aubrey Rosebud R. Balonzo, Science Research Specialist II, discussed ways to prevent food-related chemical contamination, proper storing of food in consideration of their chemical composition, and appropriate tests for the product.

The participants brainstormed and prepared an action plan to facilitate the application for LTO and comply with the findings and recommendations. The outputs were then presented for everyone's information and for them to adopt the best possible means to execute the plan according to the needs of each facility.

Following similar series of activities, the local government units (LGUs) of Gubat, Sorsogon and Oas, Albay, which are in the middle and first stages of the project timeline, gained ample insights from the experiences of the first four established facilities. The LGUs said that they can base their next steps and prepare accordingly considering what worked and what didn't work for the other projects.

Urging for a multi-sectoral engagement, Dir. Briñas called for the involvement of LGUs, non-government organizations, national government agencies, and the academe for this project to fully realize its goals.

DOST awards "Batman" among Outstanding Young Scientists of 2017

By JOSHUA I. LAO, *DOST-STII*
Photos by HENRY A. DE LEON, *DOST-STII*

Mr. Phillip A. Aviola *(2nd from left)* as one of the recipients of the Outstanding Young Scientist Award of 2017.

The Department of Science and Technology (DOST) recently recognized outstanding young scientists for this year, including one who specializes in bats. A student of the University of the Philippines Los Baños, Phillip A. Alviola reveals he has been fascinated with bats since he was in high school.

"Studying bats, basically, it's out of interest from high school and college. I was interested sa behavior nila, their interaction with humans, yung mga possible contacts with the disease, novel diseases essentially. We are finding out if some diseases which are familiar may have come from bats," Alviola said.

"My interest came from understanding kung paano yung mode of transfer from bats to humans and how to avoid it and in the future what are the plans and management to prevent that kind of contact," Alviola added.

Aside from Alviola, DOST recognized seven other young scientists, namely: Aletta Concepcion T. Yniguez from the University of the Philippines Diliman; Lanndon A. Ocampo from the University of San Carlos; Mario Antonio L. Jiz II from the Research Institute for Tropical Medicine; Nathaniel P. Hermosa II from the University of the Philippines Diliman; Jeffrey S. Perez from the Philippine Institute of Volcanology and Seismology; Jayeel S. Cornelio from Ateneo de

Manila University; and Krista Danielle S. Yu from De La Salle University.

DOST also recognized other remarkable individuals in the field of research and development, technology commercialization, and science administration.

Recognized in the Outstanding Research and Development Award are Dr. Nathaniel P. Hermosa II in Basic Research category, and Dr. Lucille V. Abad and Dr. Maria Patricia V. Azanza in the Applied Research category. Abad and Azanza are from the DOST-Philippine Nuclear Research Institute and DOST-Industrial Technology Development Institute respectively.

Dr. Jude L. Sasing, Ilustre I. Guloy Jr. and Dr. Ramon B. Gustilo received the Outstanding Technology Commercialization Award. Meanwhile, Raymond Girard R. Tan of De La Salle University received the Outstanding Science Administrator Award.

DOST Sec. Fortunato de la Peña and Sec. Benjamin Diokno, who represented Pres. Rodrigo Roa Duterte, handed out the plaques, certificates, and cash prizes to the awardees.

The DOST awards were conferred during the celebration of the National Science and Technology Week at the World Trade Center, Pasay City. The NSTW was held July 11-15, 2017 and featured forums, technology demonstrations, exhibits, and other activities that cater to all ages.

DOST Secretary Fortunato T. de la Peña together with the distinguished scientists who received the "Outstanding Young Scientist Award" this year.

How kids can save themselves during disasters

By **GERALDINE BULAON-DUCUSIN**, *DOST-STII*

"Walang namamatay sa lindol (Nobody dies from earthquake)," says Jeffrey S. Perez, a geologist from Department of Science and Technology-Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS). "Namamatay kapag nabagsakan ng mga gamit sa bahay. Kaya dapat, ngayon pa lang, i-check nyo na ang mga bahay nyo kung ano ang maaaring makaapekto sa inyo. (People die when they get hit by falling objects. That is why as early as now, check the things in your house that might affect you).

Perez was among the five presenters in the Disaster Summit for Grade School Children held at the recent 2017 National Science and Technology Week (NSTW) at the World Trade Center, Pasay City.

He said that on the average, the DOST-PHIVOLCS records 20 earthquakes daily. In the last 400 years, the country experienced 90 destructive earthquakes, he also informed.

On the concept of training school kids on disasters, Venus Valdemoro, public information head of the DOST-Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) said, "Japan trains kids as young as five years of age on how to save themselves during disasters."

DOST-PAGASA partnered with the Japan International Cooperation Agency (JICA) in a three-year development cooperation to enhance the Philippines' capacity on weather observation and forecasting called JICA-PAGASA on Weather Project or J-POW. The partnership includes conduct of awareness raising activities and seminars, dispatch of experts, and provision of equipment to boost the Philippines' disaster awareness and resiliency.

The summit was participated in by 250 kids from various schools and from Boys Town in Marikina. Speakers were disaster experts from PHIVOLCS, PAGASA, Philippine Nuclear Research Institute, National Research Council of the Philippines (NRCP), and Advanced Science and Technology Institute, all DOST agencies.

Participants from Manila Boys Town intently listen to the instruction on cloud experiment. (Photo by Henry De Leon

A science day out for orphans

It's a day out too for these kids and what a spree indeed it was-- they learned more about the weather, earthquakes, and science and technology (S&T). The kids are residents of Boys Town, an institution where "homeless, abandoned, forgotten, and voluntarily surrendered children, teenagers, and senior citizens" are turned over for custody.

On how inviting out-of-school kids came about, Joselito A. Carteciano, the information unit head of DOST-NRCP said, "I just thought that these kids should experience what they've never experienced before. So I approached DOST-PAGASA to include these children among their audience."

Among the topics presented to the children are: why earthquakes happen; preparing yourself in an earthquake; what is radiation and what are its benefits; experimentation on clouds; saving yourself during flood; some benefits from rain, and other weather related information.

Fe Quimson, a houseparent, lead the participants from Boystown, children six to 17 years old, in attending the summit. She said, "Marami kaming natutunan, magagamit namin in the near future. (We have learned a lot, we can use them in the near future)."

The children enjoyed the activities such as the question-and-answer in which they won some tokens. Among those who took home some tokens are Janelle Rose O. Dones, Grade 6 at Plainview Elementary School in Mandaluyong City, and four of her classmates.

Siblings James Uriel and John Renier, students of the Child Development Center-Cavite State University, came with their parents who learned more about the event from the internet. They found the summit "interesting, educational, and informative."

DOST-PAGASA Senior Weather Specialist Sharon Juliet M. Arruejo taught the kids about clouds and rain, and some of the benefits of rain, such as how it helps fulfil 50 percent of the water requirement of Angat Dam. Rain provides farmers with the needed water and also helps clean the atmosphere, she said.

Arruejo also stressed her point through a short video clip that, "Kahit bata may pwedeng gawin para makapaghanda para sa kalamidad (Even kids can do something to prepare for disasters)."

Janelle Rose O. Dones (back, right) was among the winners at the Q&A.

Students at the summit enjoyed the cloud experiment using commercial bottles with a specialized black cap from Japan courtesy of J-POW.

2017 NSTW eyepoppers

Text and photos by RODOLFO P. DE GUZMAN, *DOST-STII*

The 2017 National Science and Technology Week (NSTW), held from July 11-15, 2017 at the World Trade Center in Pasay City, featured interactive exhibits that showcased the flagship programs and services of the different agencies of the Department of Science and Technology (DOST).

ASH TALK | The Philippine Institute of Volcanology and Seismology displays the Sequence of Tephra Fall Deposit from Taal Volcano as part of its exhibit at the 2017 NSTW. The exhibit is dubbed "#handatayo" and is part of the disaster preparedness cluster of the DOST. Tephra is a Greek term for ash and a generic word used to describe any airborne pyroclastic accumulation which is unconsolidated. Tephra is classified into three kinds: ash which is fine grain, lapilli which is pea-to-walnut size from 2 to 64mm and the blocks and bombs which are incandescent lava fragments with size of more than 64mm that are semi-molten when airborne.

DON'T MESS WITH MEST | Nuclear accidents can be contained with the deployment of the Mobile Expert Support Teams (MEST) van of the Philippine Nuclear Research Institute. This innovation can assist law enforcement agencies such as the Philippine National Police that can use said van to prevent, mitigate, and apprehend suspects and criminals involved in radiological and nuclear material smuggling. The MEST van was on display at the disaster cluster exhibit dubbed "#handatayo".

FLOOD SIMULATOR | With the rainy season at hand, the exhibit on Augmented Reality Terrain/ Flood Simulator of the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) was a big hit during the celebration of the 2017 NSTW. The DOST-PAGASA booth was part of the disaster cluster exhibit dubbed "#handatayo", an appropriate theme for the PAGASA as the frontline agency that provides weather monitoring and forecasting to the public on typhoons and floods.

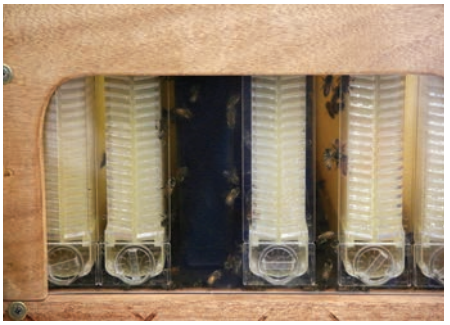
WISE WEAVING | To address the need for more quality textile materials for garments, the Philippine Textile Research Institute (PTRI) established the Innovation Center for Yarns and Textiles (ICYT) at its headquarters in Bicutan, Taguig City. With the aim of promoting Philippine textile in a program called TELA Pilipinas, DOST-PTRI now produces high quality yarns, natural fibers and natural dyes through the ICYT. These products are now being used as uniforms for the military institutions and patronized by some of the country's top fashion designers and retail stores. A video presentation of the different stages of the ICYT operation were available to guests of the 2017 NSTW. This innovation also opens opportunities to small weaving communities in the regions in line with the DOST's thrust to bring its S&T knowledge products to the grassroots.

HEALTH IN A BOX | Remote diagnostic for some common medical conditions is now a reality because of innovation in science and technology. Intensive research and development initiatives conducted by the Philippine Council for Health Research and Development led to the creation of the RxBox. This portable device captures medical signals through built-in sensors, stores data in an electronic medical record, and remotely transmits health information through the internet to doctors and medical practitioners. RxBox is useful to patients in far-flung areas with limited resources as it provides access to professional medical services that are normally available in urban areas.

FLY HIGH DIWATA-1 | The launch of the first Filipino-made microsatellite called Diwata-1 in April 2016 was one of the milestones in the country's foray into space exploration. The replica of Diwata-1 drew crowds at the NSTW. Diwata-1 was designed and developed by nine Filipino scientists and engineers with the help of experts from Tohoku University and Hokkaido University and the Japan Aerospace Exploration Agency. The project is part of the Philippine Scientific Earth Observation Micro-satellite (PHL-Microsat) Program. Launched a year ago from the International Space Station, the 50-kilogram microsatellite captured thousands of photographs, taken over the course of 5,000 passes around Earth, moving at a speed of 7 kilometers per second. The photos generated by Diwata-1 are available for free to interested institutions and individuals at the PHL-Microsat website. These photos can be used for disaster management, crop inventory, monitoring of territorial waters of the country for security, and others. The DIWATA program is an initiative funded by the DOST-Philippine Council for Industry, Energy and Emerging Technologies Research and Development.

STARBOOKS QUEUE | The first digital library-in-a-box called Science and Technology Academic and Research-Based Openly Operated Kiosks or popularly known as STARBOOKS drew long lines at the NSTW. STARBOOKS is one of the knowledge products of the DOST-Science and Technology Information Institute (STII). It provides to public schools all over the country access to science and technology information even without internet connection. Because of this novel product, DOST-STII was awarded in 2015 with the American Library Association Presidential Citation for Innovative International Library Projects. STARBOOKS is one vehicle that brings science and technology to the grassroots in the regions, thus empowering students to avail of affordable source of science and technology information. This ongoing initiative is in line with the current administration's thrust to promote quality S&T education to the public.

SETUP adoptors & private exhibitors @NSTW



Low-cost engine diesel for farm machineries

Text and photos by RODOLFO P. DE GUZMAN, *DOST-STII*

Engr. Francisco Dime, chief of the Design Section of the Metals Industry Research and Development Center of the Department of Science and Technology, explains the 257 different parts of the 12-horsepower single cylinder diesel engine they designed and fabricated to lower the cost of production of agricultural machineries. Engr. Dime also discussed the advantages of this locally produced engine that is 20 percent lower than commercial brands during a forum that was part of the celebration of the 2017 National Science and Technology Week held at the World Trade Center in Pasay City.

Local experts developed a low-cost 12-horsepower (hp) single cylinder diesel engine with many applications in agricultural farm machineries. The experts, all from the Department of Science and Technology-Metals Industry Research and Development Center (DOST-MIRDC) of the Department of Science and Technology (DOST), carried out the project to help lower production costs of farmers in terms of capital expenses for machineries.

DOST-MIRDC is the sole government agency tasked to provide support and conduct research and development programs for the metals industry sector. Its sister agency, the DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD), funded the P20 million project.

"The cost of an imported 12-hp single cylinder diesel engine is between P75,000–P90,000 but we were able to produce one that is much cheaper and more fuel efficient," said Engr. Francisco C. Dime, chief of DOST-MIRDC's design section.

A single cylinder diesel engine is a type of combustion engine that features only one cylinder or chamber [with just one piston] that moves and engages combustion which is the source of its power. This type of engine is very suitable for smaller types of motorized vehicles like tractors, machines like pump drive and grain mill drive, and tools.

According to DOST-MIRDC, this type of engine has many advantages. It has low production cost, is lightweight, simple to operate, and compact. In fact, according to experts from DOST-MIRDC, the locally developed engine is around 20 percent cheaper than popular Japanese or Indian brands in the market today.

With this innovation, farmers will be able to save on costs of farm machineries. Said machineries help improve production and income. Furthermore, the DOST-MIRDC developed engine is 38 percent more efficient than other similar petroleum-based engines.

The said engine is composed of some 257 parts that is water cooled [installed with radiator] and the prototype uses mostly locally fabricated parts made by DOST-MIRDC. It has already passed the initial testing and is now undergoing further tests in the fields in Nueva Ecija and Los Baños in Laguna.

DOST-MIRDC actually developed five prototypes and installed in different farm machineries for testing. A second phase of the project is in the pipeline with further improvements on the design of the engine which is air cooled and has no need for a radiator. The research team is also looking at other possible applications in the fishing industry such as fishing boats.

DOST's Best SETUP Adoptor builds success from scrap

By ALLAN MAURO V. MARFAL, *DOST-STII*
Photos by HENRY A. DE LEON, *DOST-STII*

The popular saying "May pera sa basura" ("There's money in garbage") proved to be very true for Demetrio V. Perez.

Demetrio V. Perez, owner of DP Fabrication and Machineries in Davao del Sur, receives a trophy from Secretary Fortunato T. de la Peña after being named as this year's Best SETUP Adoptor for National Level. Awarding ceremony was held on July 14 at World Trade Center in Pasay City, as part of the 2017 National Science and Technology Week celebration.

Trophy for 2017 Best SETUP Adoptor awarded to DP Fabrication and Machineries.

Photo courtesy of DP Fabrication and Machineries

Demetrio V. Perez, 53, owner of DP Fabrication and Machineries, remembers all the things that he picked up and collected on the streets to provide for his family.

"Naaalala ko pa po noon, sa gitna ng kainitan ng araw, kung saan-saan po ako nakakarating para lang makapulot, makahingi, at makakolekta ng mga bote, diyaryo, mga kagamitan na itinapon na pwede pang mapakinabangan," Demetrio said.

(I can still remember, in the middle of the scorching heat of the sun, I roamed around everywhere just to pick up, beg for, and collect empty bottles, newspapers, and other trash items that can still be used.)

For almost a decade, Demetrio and his family managed to survive and send his children to school by selling scrap materials in the junk shop.

"Iyong pagtutulak ng kariton at pagbebenta ng bote't dyaryo, kakaunti pa lang po kami gumagawa noon, kasi pakiramdam ko nahihiya iyong iba," Demetrio told.

(There were just a few of us then pushing cart and selling empty bottles and newspapers because I feel that others were ashamed of doing it.)

However, Demetrio did not expect that roaming around with his cart and the scraps that he collected would lead him to the path of success in the coming years.

Demetrio, who only reached Grade 6, earned a living by collecting bottles and iron. While many people were reluctant to have this kind of job, he chose to live with it,

and make the most out of it—with the help of his supportive wife.

His earnings started from P300-500 a day, barely enough for the family's basic needs. But finally after three years, he and his wife were able to afford a small space for PHP1,500 per month rental. This time, they are the ones buying junk from fellow collectors.

"Misis ko, nagbabantay ng pwesto. Ako, nagtutulak ng kariton," he said. (My wife watches over our store, while I push the cart.)

He continued, "Ako yung nangangalakal, namumulot sa mga kalye. After three years may pwesto na ako, ako naman ang bumibili. Sa awa ng Panginoon, nagkaroon ng volume, ng mga suki."

(I was the one picking up scraps on the streets. After three years, we were able to put up a store-- this time, it is I who buy scraps. In God's grace, our volume of orders increased and we started to have regular customers.)

Their earnings then went up to P2,000-3,000 a day from buying junk.

The birth of a successful business

With the purpose of earning more, he decided to acquire a machine so he himself could fabricate machines. With only P15,000 to spare, he established his own company called DP Fabrication and Machineries in Davao del Sur. The company produces farm equipment such as corn mill, rice mill, and the likes.

Two years after, he decided to close his junk shop so he could focus on his latest investment which, not so long after, proved to be very beneficial.

How he learned about DOST SETUP

What helped his business to improve is the Small Enterprise Technology Upgrading Program or SETUP of the Department of Science and Technology (DOST). This program encourages and assists micro, small, and medium enterprises (MSMEs) in adopting technological innovations to improve their products and operations.

It was around 2012 when Demetrio first learned about SETUP through the people in their province. He admitted that he did not apply immediately as he was afraid to be in great debt.

Fortunately, in 2014, after DOST's encouragement, Demetrio decided to avail himself of SETUP assistance. After completing and submitting required documents, his application was finally approved.

Demetrio shared that one of the factors that made him decide to apply for SETUP of DOST was when he saw the potential of his fabrication business. Despite using second hand machine, he managed to gain significant number of customers.

"Mayroon akong nabili na second hand na makina para makagawa naman ako ng mga makina para sa farming at coffee production. Kaso pakaunti-kaunti lang ang nagagawa ko noon. Pero mula noong makabili ako ng bagong makina sa pamamagitan ng SETUP ng DOST, mas marami, mas mabilis, at mas magandang kalidad na ang nagagawa naming makina para sa pagsasaka," Demetrio said.

(There was this second hand machine I previously bought that can manufacture machines for farming and coffee production. Unfortunately, I could only manage to produce few machines with that. After we availed ourselves of SETUP assistance from DOST and bought new machines, we were able to fabricate more machines for farming in a short period of time and with better quality.)

Perez shares his humble beginnings as scrap collector before he established his fabrication business.

He took the big leap and got a P750,000 funding support from the DOST—and followed by a P3 million loan funding this year, also from DOST.

Since then, amazing success followed. He was able to buy machines that helped improved production in his business. Also, he was able to accept online orders through a computerized machine, and this further improved the volume of orders.

Demetrio said that he now also has workers to make the job faster.

DP Fabrication and Machineries gained various clients from different regions in Mindanao, including Department of Agriculture offices and local government units (LGUs).

All the risks he took paid off when the DP Fabrication and Machineries emerged as the national winner in DOST's best adoptor category that gave Demetrio P100,000 cash prize and another P30,000 for being in the top five finalists.

"Ni sa panaginip, hindi ko inakalang makikilala ako ng isang sangay ng gobyerno," Demetrio said upon receiving the award. (Even in dreams, I haven't thought that I would be recognized by a government agency.)

As for his future plans, this was what he had to say.

"We also plan to venture into other kinds of business in the future. For now, we will focus first on DP Fabrication and Machineries, especially now that the computerized machines are arriving. There is a huge volume of orders because of the LGUs."

Last June 30, Demetrio celebrated his birthday by donating 500 bags of school supplies, containing school bags, notebooks, and ballpens to less fortunate children in a remote area. He also donated a corn sheller which made shelling faster and more convenient to people in the said area.

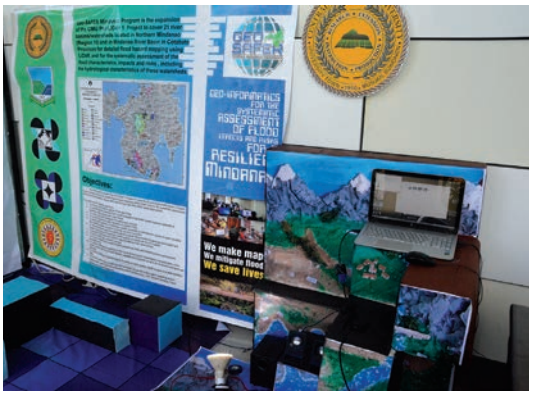
Indeed, there are no shortcuts to success. But if we would only persevere to achieve our goals—and would open up ourselves to possibilities—just like what Demetrio did when he accepted DOST's SETUP Program—we would surely turn our great ideas into huge chunks of success.

Photo courtesy of DP Fabrication and Machineries

Science for the People

By HENRYLITO D. TACIO, *Contributor*

Sec. Fortunato T. de la Peña challenges each Filipino to be a part of something great for the country and for fellow Filipinos which is the essence of "Science for the People."



"I will see to it that capable state colleges and universities in the regions are given an opportunity to have their share of R&D (research and development) work to address the concerns of their regions," said Fortunato T. de la Peña, head of the Department of Science and Technology (DOST).

"I will work out a program to immerse our scholars in order to do work that will help communities in the regions. I will also work for a better utilization of our research outputs, our scientific and technological facilities and expertise," he added.

De la Peña said those words in my interview with him when he was appointed by President Rodrigo R. Duterte as one of his cabinet members. I think I was one of the very first journalists who did an extensive report on what he really wanted to accomplish as science secretary.

Last August 8, I had an opportunity of meeting him personally – during a press conference in Butuan City. It was during the launching of Geo-informatics for the Systematic Assessment of Flood Effects and Risks towards a Resilient Mindanao (Geo-SAFER Mindanao) that I had a first glimpse of him in person.

In his keynote address, he said: "We must realize that the attainment of success for a program like this (referring to Geo-SAFER) vastly depends on each of the stakeholders, not just on the researchers, not just on the partner government agencies, and not just on the local government units."

"Thus, stakeholders must learn their roles in order to function according to the objectives of the program. Their commitment and cooperation must be ensured to guarantee success. I believe each person present here is equally important and since you chose to be here, I also believe you already know your roles and are very committed to the accomplishment of the program's objectives."

"Personally, I am glad, since this event is connected to

DOST's theme 'Science for the People.' I am mentioning this because the implementation of the Geo-SAFER Mindanao Program is a very good example of showing that science is for the people."

"Science for the People" was the theme of the National Science and Technology Week (NSTW) celebrated every month of July through Proclamation No. 169 of 1993. The NSTW aims to recognize the contribution of science and technology in the development of the country and garner support from the public and private institutions for its sustainable development.

Science & Technology (S&T) week continues to be celebrated in various regions in the country. This was de la Peña's way of bringing services, products, and research outputs that help improve the life of every Filipino.

"Since the promotion of science and technology is part of the agenda of our national leadership, I'm encouraging not only the current researchers but also the future ones to pursue R&D on S&T innovations which are relevant to our needs and in the region, because what more could be fulfilling than to be a part of something great for your country and for your fellow Filipinos?" he said in his keynote address.

"What I discussed was just a sample of how S&T can be brought closer to the people. Through these government-funded programs, Filipinos would become more educated and resilient and through these, science and technology would be truly felt by each and every Filipino as well as the local government units which then would be more encouraged and driven to participate in utilizing and partaking science and its innovations especially to issues regarding the flood disaster risks and management."

According to him, the government is allotting much money on S&T. "It would be a waste not to maximize its usefulness," he said. "And when I say 'maximize', I mean not just some but all communities, cities, municipalities, provinces, regions, and the entire country should benefit from it. S&T should be felt most especially by the common people in rural and urban areas. We are determined to reduce, if not dissolve, the inequality between the poor and the rich, we are powered to create more opportunities to everybody and we are more eager to magnify the potential for growth of our country through S&T."

In his speech, he stressed on the vital role of the DOST's partners in R&D, referring to government agencies and local government units.

"The support of the government agencies would greatly help in the execution of the objectives of these government programs. Also, the cooperation of our local government units and their willingness to embrace the new trends, methods, and services of S&T and integrate it to their city and municipality plans is very much valued. Through the cooperation and support of every stakeholder, we can move forward and grow as one entity."

In a text message, de la Peña also emphasized the department's effort at strengthening R&D centers in the regions whose area of focus, whether technology areas or commodities or sector, are expected to play a significant role in the country's development.

"These are mostly found in higher education institutions," he said, adding the importance of transferring the technologies or knowledge or products of R&D which are proven beneficial to appropriate adopters – whether other line agencies which will roll out the application, the private business sector which can commercialize them, or local government units or communities which can use them for improving their status/quality of life.

In conclusion, he said in his text message: "We are supporting the president's agenda, which is promoting science, technology and the creative arts to enhance innovative capacity towards inclusive development. This is how we give meaning to "Science for the People."

Science journ writeshop highlights space tech development

By ALLAN MAURO V. MARFAL, *DOST-STII*
Photos by JOSHUA I. LAO, *DOST-STII*

Writeshop participants are trying to beat the one-hour deadline during the workshop session.

More than 50 students from different educational institutions around Metro Manila and nearby provinces did not only learn the practical uses of space technology but also the techniques on how to communicate this properly to the public.

As part of the 2017 National Science and Technology Week (NSTW) celebration, Department of Science and Technology- Science and Technology Information Institute (DOST-STII) again organized a science journalism writeshop on 12 July 2017 at the Philippine Trade Training Center in Pasay City.

The writeshop, titled "#ScienceJournoAko: Communicating Space Technology", focused on helping the participants have better appreciation of space technology and its development in the country, and equip them with proper knowledge and skills in writing stories on the said topic.

Dr. Aristotle P. Carandang, chief of Communication Resources and Production Division of DOST-STII and one of the writeshop's speakers, shared the importance of communicating science and technology to people.

"All researches and innovative products developed by our scientists and engineers were designed to address existing problems of different communities," said Dr. Carandang. "Science communicators build a bridge that would make these new discoveries relevant to their intended beneficiaries."

Importance of space technology development

Dr. Rogel Mari D. Sese, focal person for Philippine Space Science Education Program of DOST-Science Education Institute, gave an update on space technology development in the country. He talked about the

Dr. Rogel Mari D. Sese, focal person for Philippine Space Science Education Program of DOST's Science Education Institute, shares with the participants the latest update on space technology development in the country. It includes the development of Diwata-1, the Philippine's first microsatellite, Philippine Earth Data Resource and Observation and pending bill on the creation of the Philippine Space Agency.

(Below) Timothy James M. Dimacali, editor of SciTech section of GMA News Online shares with the participants how he enjoys reading and writing stories related to space exploration, astronauts, microsatellite, and other similar stuff. According to him, aside from curiosity, the benefits offer by its various applications motivates him to write stories on space technology.

development of the Philippines' first microsatellite called the Diwata-1, and the pending bill on the creation of the Philippine Space Agency.

In his presentation, he pointed out that our huge investment on space technology development will provide long-term benefits for our country especially in the areas of agriculture, disaster preparedness and management, environment, and national security.

"Having a space program is expensive, but not having one is more expensive in the long run, because the absence of a space program will obstruct the technological progress of the Philippines," said Dr. Sese.

Meanwhile, Timothy James M. Dimacali, editor of SciTech section of GMA News Online, shared how he enjoys reading and writing stories about space explorations, astronauts, sci-fi, and some other stuff.

"Ever since I was a child, I have been fascinated by space opera-type science fiction. It combines all of my main scientific interests: technology, biology, astronomy, and even dramatic storytelling. Science fiction had always been a reflection of humanity's dream of the future, and I would like to think that we Filipinos have a place for ourselves among the stars," said Dimacali.

He also stressed the potential benefits of publishing stories on space technology development.

"We need to dream the future! We should see the world not just as it is, but as it should be and as it can be for us. That is why we need more stories about the Philippines' space efforts. It should be something palpable, something that we can see and picture clearly in our mind's eye," he said.

Dimacali admitted that space program is, of course, very complex but if we can distill it into images that captivate the popular imagination then maybe it can inspire more Filipinos to reach for the stars figuratively and literally.

On the other hand, he also emphasized that well-written stories on space technology should provide analogies and effective visual representation on how it could be a valuable tool for the agriculture sector as well as in conserving our environment.

Dimacali also cited the crucial part of having a good headline and photo support to hook the audience in reading the article. According to him, the impact of a good headline and photo combination lies in its ability to appeal to as many of the senses as possible.

The first science journalism writeshop organized by DOST-STII was held during the 2015 NSTW celebration at the SMX Convention Center. The writeshop, intended for college communication and journalism students and campus journalists, focused on disaster preparedness management. Another writeshop was held the following year for NSTW, which focused on agriculture and health.

Aside from these, DOST-STII partnered with different universities to bring science journalism writeshop in the campuses. Previous sites of science journalism writeshops include Adamson University, Batangas State University, and Urdaneta City University. A separate writeshop was held also during last year's National Biotechnology Week at the Philippine Science High School main campus.

ARMM rising

By ARISTOTLE P. CARANDANG, LPT, MPS, PHD, *DOST-STII*
Photos by GERARDO G. PALAD, *DOST-STII*

It was relatively humid in that early Monday morning with the day's temperature registering at 33 degrees Celsius. Two giant ceiling fans tried to cool down the covered court where few souls were busy finishing the final touches on some exhibit booths. The immediate surrounding was expectedly colorful, depicting the culture down south.

While the air remained calm, the heat was rising in excitement. The venue – a covered court called the Sultan Kudarat Gymnasium was in the Municipality of Sultan Kudarat, Maguindanao in the Autonomous Region of Muslim Mindanao or ARMM.

For the first time, the Department of Science and Technology (DOST) in ARMM celebrated its Regional Science and Technology Week or RSTW in the town of Sultan Kudarat. First time, too, was the holding of the Regional Invention Contest and Exhibit (RICE) in this part of the country. In fact, there were many firsts in this three-day event as everyone moved within the bounds of martial law.

Unknown to many, especially to those who live outside of Mindanao, places in the south are reasonably peaceful with the major exception of Marawi City due to reasons already known to many.

Some scenes at the opening of the 2017 Regional Science and Technology Week and Regional Invention Contests and Exhibits by DOST-ARMM. Ribbon-cutting was led by DOST-TAPI Director Engr. Edgar I. Garcia, DOST-ARMM Regional Sec. Myra B. Mangkabung, Sultan Kudarat City Mayor Datu Shameem Mastura and other DOST and local government officials

Sultan Kudarat City Mayor Datu Shameem Mastura thanked the DOST for choosing the city as this year's venue of the DOST-ARMM's celebration of Regional Science and Technology Week.

In her message, DOST-ARMM Regional Secretary Myra B. Mangkabung said, "With a strong desire to share the gains and strides of the Department of Science and Technology-ARMM to the people and various stakeholders in the mainland provinces of Maguindanao and Lanao del Sur, and with hope that science, technology and innovation will bring a difference to the lives of the people for a better future, this is the reason why the celebration was held in the Municipality of Sultan Kudarat, Maguindanao."

Reaching out, 'Agham para sa bayan'

True to its theme of "Science for the People" or translated as "Agham para sa Bayan", the DOST-ARMM has reached out to the municipality of Sultan Kudarat being its local partner. A strong partnership with the Local Government Unit (LGU) has been inked for several projects. One of these was Project DEWS or Deployment of Early Warning System where the municipality received Automated Rain Gauge and Automated Water Level System – devices that will provide lead-time warning to vulnerable communities against flood.

In the area of education, the DOST-ARMM also ensures that the region is not left behind with the latest educational tools. Students from two schools in the Province of Maguindanao: Sultan Kudarat Islamic Academy in the Municipality of Sultan Kudarat and Datu Arnel Datukon National High School in the Municipality of Datu Odin Sinsuat received the STARBOOKS or Science and Technology Academic and Research Based Openly Operated Kiosks. It is one of the major projects of the DOST through the Science and Technology Information Institute. It is the country's first stand-alone digital science library that provides thousands of digitized science and technology (S&T) resources in various formats (text, and audio-video) set in a user friendly interface. With STARBOOKS, students and teachers from even the farthest parts of the country can now have access to S&T information.

DOST-ARMM Regional Sec. Myra B. Mangkabung hands over plaques of recognition to newly-recognized S&T ambassadors for their invaluable contributions in promoting and championing S&T efforts in the region.

DOST-ARMM's S&T ambassadors

Assemblywoman Irene P. Tillah (Sulu, 2nd district), assistant majority floor leader of the regional legislative assembly – She was recognized as S&T Ambassador on Policy for her efforts in promoting the Science and Technology department's programs in her district. One of the resolutions she authored was urging the Department of Trade and Industry, DOST, and all other agencies concerned in the ARMM to enhance and strengthen the promotion and advancement of the halal industry in the region.

Dr. Modrika M. Masukat, municipal agriculture officer from Mamasapano, Maguindanao – She was named Technology Transfer Adopter Ambassador for her efforts in adopting the complementary food production, a technology from DOST-Food and Nutrition Research Institute.

Dr. Rosemarie D. R. Josue and Prof. Rowena Caro-Benavides, both of the Mindanao State University (MSU)-Maguindanao – They were recognized as Ambassadors on Research and Development. Dr. Josue is involved in the ongoing research project called "Establishment of Laboratories for Predators (*Chilocorus nigritus*) and Parasitoids (*Compirella sp.*) of Coconut Scale Insects in Basilan." The cocolisap infestation on coconut farmers in the province has been so massive that it needs S&T intervention. The project is a collaboration of DOST-ARMM, Philippine Coconut Authority, MSU-Maguindanao, and the local government of Basilan. Dr. Caro-Benavides, meanwhile, is involved in the R&D project "Utilization of Bamboo to Prevent Soil Erosion in Maguindanao" which was conceptualized due to massive flooding in the area especially during heavy downpour.

The municipality of Panglima Sugala in Tawi-Tawi and the city of Lamitan in Basilan were named as supportive local government unit ambassadors.

Arman Ali Ghodsinia and Jai Aliyah M. D. Salliman were recognized as S&T youth ambassadors.

Ahalnida Majid Tambihasan was named as DOST scholar ambassador.

Aside from the DEWS and STARBOOKS programs of the agency, the host municipality also received the RxBox, designed to provide better access to life saving health care service in isolated and disadvantaged communities nationwide. Mangkabung said that the RxBox is a technology that revolutionizes the capacity of health providers to diagnose potential health warnings through examination of vital signs even in the absence of doctors, and to upgrade a patient's medical records.

On the part of the LGU, Datu Shameem B. Mastura, mayor of Sultan Kudarat, commended the DOST-ARMM as it showed dedication to build a strong nation through S&T intervention. And for holding the event in his hometown he said, "It is a matter of privilege that Sultan Kudarat has been chosen to host a great celebration featuring discoveries and innovation of the eight priority outcomes of the DOST that will offer a lot of opportunities to the people from all walks of life."

The RSTW coincided with the RICE event participated in by schools and professionals from the region. With the support from DOST-Technology Application and Promotion Institute (TAPI), the DOST-ARMM recognized the scientific and technological contributions of individuals and institutions.

In his message, Engr. Edgar I. Garcia, DOST-TAPI director said that the conduct of RICE in DOST-ARMM's RSTW signified the joint commitment in showcasing the ingenuity of Filipino inventors in developing high impact technologies and the quest for excellence in inventive endeavors.

The three-day event was capped by a "scientific parade" dubbed "Lakad Agham" where 19 schools from the district of Sultan Kudarat donned colorful and theme-based costumes.

An estimated crowd of 3,500 people joined the 2017 RSTW celebration in Sultan Kudarat, Maguindanao.

Students from schools in Sultan Kudarat City participated in a parade called "Lakad Agham" wearing creative costumes relevant to the event's theme.

DOST-MIMAROPA: Changing lives through science

By ROSEMARIE C. SEÑORA, *DOST-STII*
Photos by HENRY A. DE LEON, *DOST-STII*

Department of Science and Technology (DOST) Secretary Fortunato T. de la Peña and Romblon Governor Eduardo C. Firmalo led the ribbon cutting ceremony to formally open the 2017 Regional Science and Technology Week celebration at the Virginia Centurione Bracelli School, Odiongan, Romblon headed by the DOST-MIMAROPA region. Also present are (from left to right): DOST Undersecretary Renato Solidum Jr., DOST Assistant Secretary Teodoro M. Gatchalian, DOST-Technology Application and Promotion Institute Director Edgar I. Garcia, DOST-Science and Technology Information Institute Director Richard P. Burgos, DOST-MIMAROPA Regional Director Ma. Josefina P. Abilay, and Odiongan Mayor Trina Firmalo-Fabric

In pursuit of its commitment to spur change in the region, the Department of Science and Technology (DOST)-MIMAROPA has recently and successfully concluded the celebration of its 2017 Regional Science and Technology Week (RSTW), with the theme, 'Changing Lives through Science."

The regional offices representing the island provinces of Oriental and Occidental Mindoro, Marinduque, Romblon, and Palawan, gathered in Odiongan, Romblon last August 15-17, 2017 to stage technology forums, showcase the creativity of students and local inventors through the Regional Invention Contests & Exhibits (RICE), and help aspiring business owners acquaint themselves on how science and technology can help their businesses.

Dignitaries who graced the three-day event include Romblon Governor Eduardo C. Firmalo, Odiongan Mayor Trina Firmalo-Fabic, and Vice Mayor Mark Anthony Maulion; DOST officials namely: Secretary Fortunato T. de la Peña, Undersecretary Renato P. Solidum, Assistant Secretary Teodoro M. Gatchalian, DOST-Technology Application and Promotion Institute Director Edgar I. Garcia, DOST-Science and Technology Information Institute Director Richard P. Burgos, and DOST-MIMAROPA Regional Director Ma. Josefina P. Abilay.

During the opening ceremonies, Mayor Firmalo-Fabic expressed appreciation for the help of DOST, not only in the economic and development growth of the municipality of Odiongan, but also for the neighboring towns in the province of Romblon.

While Gov. Firmalo highlighted the defining unity of Romblomanons despite the challenge posed by the separation of the 10 islands of the province, adding that science really changes and enhances people's lives.

For the part of the DOST, Sec. de la Peña, proudly presented the various programs of the department that help alleviate the lives of the people in the countryside.

He mentioned about the nine sectors that are being prioritized by DOST – economy, health, water, food, energy, environment, mobility or transportation, disaster risk reduction and climate change adaptation, and education.

For the economy, the Secretary talked about the help being extended to the micro, small and medium enterprises (MSMEs) through the Small Enterprise Technology Upgrading Program (SETUP).

He also mentioned about the Tuklas Lunas Center Project—a drug discovery program of DOST which aims to develop new drugs for tropical and other diseases, including cancer.

Sec. de la Peña also informed the students in attendance about the Young Innovators' Program under the DOST-Philippine Council for Industry, Energy and Emerging Technology Research and Development where high school and college students can propose their own research projects.

Science Ambassador Awardee

During the opening ceremonies, DOST-MIMAROPA conferred an award to Gov. Firmalo as a Science and Technology Ambassador in recognition of his fervent support in the field of science and technology in the country.

Through Gov. Firmalo's efforts, the Philippine Science High School System MIMAROPA Region Campus (PSHS-MRC) in Odiongan, Romblon was established.

In October 2014, the PSHS System Board of Trustees signed the resolution to establish the 15th PSHS campus in Barangay Rizal, Odiongan, Romblon. The five hectare lot that will be the permanent home of PSHS-MRC was donated by the Provincial Government of Romblon, headed by Gov. Firmalo.

Meeting with MSMEs

DOST Sec. de la Peña met with various MSMEs from the region that have been assisted by the department.

Romblon Provincial Director Marcelina

DOST Sec. Fortunato T. de le Peña and DOST-Romblon Regional Director Ma. Josefina Abilay present a plaque of recognition to Gov. Eduardo C. Firmalo of Romblon for being a Science and Technology Ambassador.

"Masipag, masigasig at mabait." In front of other DOST officials, local government officials and MSMEs from the MIMAROPA Region, this was how Sec. de la Peña gamely describes those who succeed in their own business ventures, adding that the true ingredient of success starts within themselves and that DOST is only tasked to offer assistance whenever needed.

V. Servañez proudly presented the achievements of the region when it comes to assisting MSMEs.

According to Servañes, MIMAROPA has the highest number of graduates in SETUP with average refund rate of 98%.

Servañes reported that 53% of the companies are involved in the food processing industry; 9% are involved to metals and engineering, 12% are in the furniture industry; 20% are involved in gifts, decors and handicrafts; 2% are in information and communication technologies; and the remaining 4% are in the agriculture and aquatic industry.

RICE

Among the highlights of the celebration is the three-day RICE event which featured the different products and inventions of students from various schools in MIMAROPA region.

Best Technopreneurs

DOST-MIMAROPA awarded two of the region's entrepreneurs with the Best Technopreneur award under the categories core and non-core last August 17.

For the core category, Shapes Bakeshop, owned by Ms. Kim Fernandez and located in Odiongan, Romblon, won the 2017 Best Technopreneur award.

Shapes Bakeshop is known in the Tablas Island for specializing for making delicious bread and pastries like *ugoy-ugoy* and *tipin*.

With the help of the DOST, she was able to acquire various equipment that helped in making quality bread and pastries. Fernandez aspires to expand her business by targeting the markets of the neighboring islands of Romblon, Sibuyan, and Mindoro.

For the non-core category, Balanacan Multi-Sectoral Credit Cooperative won the Best Technopreneur award. The cooperative, which is based in the province of Marinduque, is widely known for making vacuum dried *dilis*.

Like Ms. Fernandez, Celso Quinto, president of the Balanacan Multi-Sectoral Credit Cooperative, is also thankful for the help extended by the department.

Both winners received certificates, trophies, and P30,000 cash that they can add to their capital.

Project Visits

After the opening ceremonies and the press conference, Sec. de la Peña travelled to the town of Romblon where he visited the Romblon Shopping Center and three of the DOST-assisted projects/SETUP adoptors, namely Golden Hills Marble Supply, Hernandez Marble Supply, and Santiago Marble Designs.

Dekada MIMAROPA

Along with the celebration of the 2017 RSTW, DOST-MIMAROPA also marked its 10th year anniversary. Dubbed as "DEKADA MIMAROPA", the culminating activity celebrated the DOST-MIMAROPA's 10 years of breaking barriers; harnessing science, technology and innovation; and of changing lives in the region while promising that it will "continue to deliver high quality products and services and groundbreaking innovations that will indeed change the lives of the people in the years to come."

SyenSaya 2017: S&T in Harmony and Biodiversity

By JASMIN JOYCE P. SEVILLA, *DOST-STII*
Photos by GERARDO G. PALAD, *DOST-STII*

DOST-Calabarzon Regional Director Dr. Alexander Madrigal graced the opening ceremonies of the 2017 RSTW in UPLB.

One of the innovations presented under the agriculture exhibit is Bio N™, a biofertilizer developed from UP Los Baños.

High school students from Laguna gather around the edible landscape display under the agriculture cluster of the exhibit. Edible landscaping is a new approach that combines science with a touch of creativity forming an innovative type of crop production. It is a mix of vegetables, herbs, and other ornamental plants arranged in an aesthetically-pleasing design.

As a way of promoting the innovations and technologies in the marine and agricultural sectors, the Department of Science and Technology (DOST)-CALABARZON, together with the Los Baños Science Community Foundation, Inc. (LBSCFI), Syensaya, celebrated the 2017 Regional Science and Technology Week (RSTW) with SyenSaya, the Los Baños Science Festival that is held anually. The event featured interactive urban, marine, agriculture, and environment-related science and technology exhibits and fora - all public viewing.

With the theme "Science for the People: S&T in Harmony with Biodiversity," the event was held at the Copeland Gymnasium, University of the Philippines Los Baños (UPLB), Los Baños Laguna on August 2-4, 2017.

According to Dr. Alexander Madrigal, DOST-Calabarzon regional director and LBSCFI president, the town of Los Baños is known as "Science and Nature City." The region's theme for the science and technology (S&T) week is only fitting as it highlights the significance of science and technology in the biodiversity and richness of nature alongside with the innovations and advancements in the region in terms of industrialization and modernization.

SyenSaya's Wonderama Exhibit

Majority of the event focuses on SyenSaya's Wonderama Exhibit, which features the latest innovations in S&T under four exhibit areas namely

agriculture, environment, urbanization, and marine and aquatic resources.

In addition to this, the biofertilizer (Bio N™) presented in the event is a microbial-based fertilizer which contains microorganisms (bacteria) that are extracted from the roots of *talahib* (*Saccharum spontaneum*). The bacteria convert atmospheric nitrogen (N2) into a form usable by rice, corn, vegetable, and other root crops essential for their shoot growth enhancement and root development. Bio N ™ is available in powdered form packed in 200-gram sachets that can be used for either seed inoculation, direct broadcasting over the seeds or mixed with water as root dip. Packets of Bio N ™ and other biofertilizers and crop enhancers from UPLB were showcased in the agriculture cluster of the Wonderama exhibit.

Project Visits

Sec. de la Peña visited some of the beneficiaries of DOST's Small Enterprise Technology Upgrading Program (SETUP) in Laguna during the 2017 RSTW celebration of DOST-CALABARZON. One of beneficiaries visited is the Zenaida Corcuera Food Products (ZCFP) shop based in Los Baños, Laguna. In the shop, owner Zenaida Corcuera showed Sec. de la Peña the shelves filled with food products that they manufacture such as peanuts, banana chips, chicharon, cashew nuts, and camote chips. Corcuera has been a SETUP beneficiary since 2006, which enabled her to enhance her product's market appeal, improve its quality and shelf life, and increase the firms annual production

The secretary also visited the duck farm owned by Napoleon Dator Jr. and Josephine Dator in Victoria, Laguna.

They supply the raw ingredients (organic eggs and farm fresh duck meat) for the restaurant Itlog ni Kuya, Atbp., which serves salted eggs, balut, penoy, peking duck (fresh and cooked), native ducks, and even pastries such as leche flan and special rice cake with duck eggs as its special ingredient.

The Dators' are SETUP beneficiaries since 2013, from which they have acquired sets of incubators that helped them increase their production volume of hatched duck eggs from 400 percent to 600 percent.

Itik Pinas roam around freely in the Dators' farm.

One of the farm's 20 employees is preparing a tray of duck eggs for incubation.

Pure-bred ducks, or more commonly known as "Itik Pinas", roam around freely around the Dators' farm. This special breed of ducks is capable of producing 70 percent more eggs per year than the 55 percent annual production rate of ordinary breeds. The egg produced by "Itik Pinas" weighs 65 grams each, which is ideal for high-quality products such as *balut*.

One other food processing enterprise that Secretary de la Peña visited is the Reysons Food Processing located in Calauan, Laguna. Mr. Noel Floria, plant manager of the processing unit, shared their company's humble beginnings to Sec. de la Peña. The assistance they've received from SETUP helped them improve their production in terms of volume and quality. Also, their improved label and packaging helped them enhance their products' marketability.

Engr. Mariñas (middle) shows Sec. de la Peña (left) and Dr. Alexander Madrigal (right) around some of the equipment that they manufacture.

Sec. de la Peña with Zenaida Corcuera, owner of ZCFP enterprise.

Reysons Food Processing produces Tita Ely's sweet preserves.

Reysons Food Processing produces Tita Ely's sweet preserves such as sweet beans, garbansos, kaong, coffee jelly, nata de coco, and ube – the main ingredients that we all enjoy in our *halo-halo* and in other sweet Filipino delicacies as well.

Aside from food processing enterprises, Sec. de la Peña also checked out Mariñas Technologies, Inc. in Pila, Laguna. Owned and managed by Engr. Mauricio C. Mariñas, the metals equipment facility produces large capacity rice mills and other post-harvest equipment such as dryers. The company first availed of SETUP assistance five years ago which helped them minimize their waste and maximize their profit, increase their sales by 10 percent each year, and produce better quality outputs.

Participants to the event were mostly composed of students from across the region. They all lined up at the registration booth eager for the exciting activities in store for them.

Region II celebrates RSTW in Isabela

Text by JASMIN JOYCE P. SEVILLA, *DOST-STII*
Photos by GERARDO G. PALAD, *DOST-STII*

Department of Science and Technology (DOST)-Region II Regional Director Engr. Sancho A. Mabborang, accompanied DOST Undersecretary Brenda L. Nazareth-Manzano, as they both arrived at the opening ceremonies of the event. Behind them are the line of booths that feature various science and technology innovations and products.

The Cagayan Valley region sure knows how to make science and technology (S&T) fun and exciting as the region celebrated the Regional Science and Technology Week (RSTW) last August 14-18, 2017 in Cauayan City, Isabela. The five-day event showcased the region's latest innovations and featured the products of the region's micro, small and medium enterprises (MSMEs) that were assisted by the Department of Science and Technology (DOST). The RSTW also featured S&T quizzes and fora for the student participants.

DOST key officials including Secretary Fortunato T. de la Peña, Undersecretary for Regional Operations, Brenda L. Nazareth-Manzano, Assistant Secretary for Finance and Legal Affairs, Emmanuel S. Galvez; DOST-Technology Application and Promotion Institute Director Edgar I. Garcia, other regional directors, and representatives from various DOST agencies and research councils all joined in the celebration of S&T week in the region.

Among the technologies presented in the event was SARAI, which stands for Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines" program. The program aims to improve the

The stunning contestants from the Search for Ginoo at Binibining Agham at Teknolohiya 2017.

Carrying the theme "Science for the People," the contestants also showcased their creativity and passion for S&T as they all dressed up with their innovative costumes.

Cauayan National High School representative, Cielo Rose Lim (fourth from the left), bagged the Binibining Agham at Tehnolohiya 2017 award. The title Ginoong Agham at Teknolohiya 2017 went to Lance Angelo T. Rovillos (first from the left),from Doña Aurora National High School. They are accompanied by (from left) Vicky Mabborang, Dr. Aquino, and Engr. Mabborang.

forecasting and crop monitoring system of Philippine crops like corn, coconut, banana, coffee, and cacao.

In addition to this, the first ever National Laboratory Summit was conducted during the first three days of the RSTW. The said summit attended by staff of regional testing laboratories nationwide, aims to further strengthen the awareness of laboratory staff and chemists regarding laboratory regulations and laws, as well as on the innovations on laboratory testing. One of the key speakers to the event was a representative from the Philippine Drug Enforcement Agency who discussed RA 9165 or the Guidelines on the Purchasing and Handling of Controlled Precursor and Essential Chemicals or CPECs on the last day of the summit.

Other than the said activities, what made the RSTW in Isabela more vibrant and entertaining was this year's Search for Ginoo at Binibining Agham at Teknolohiya, a S&T-themed pageant for senior high school students from across the region.

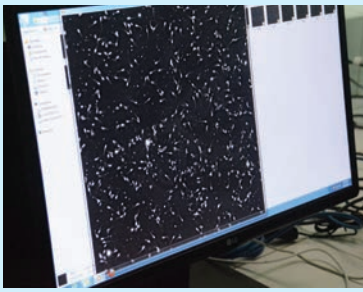
The contestants impressed the audience and judges with their charm and wit during the question and answer portion of the event, wherein the contestants had to explain the various programs of DOST within a limited time. The contestants' answers went beyond everybody's expectations as each of them answered gracefully and wittingly what STARBOOKS is, for example, or what DOST-PHIVOLCS stand for and what the agency does.

Dr. Ricmar P. Aquino, President of Isabela State University, also graced the event and welcomed guests and participants as he formally opened the celebration.

DOST Sec. de la Peña tries to charge an e-Trike (left photo) during the inauguration of the CharM station (right photo).

Project Visits

DOST Sec. Fortunato T. de la Peña led the launching of CharM project at the Isabela State University on August 18, 2017. CharM or "Charging in Minutes" is a project of Electrical and Electronics Engineering Institute of the University of the Philippines Diliman which aims to recharge local electronic vehicles in minutes rather than the regular 4-6 hours of charging. This would help the continuity of the e-Trike and e-Jeep operations.



Sec. de la Peña also visited Cagayan Valley Small Ruminants Research Center where the artificial insemination among goats is performed. The idea behind this technology is to preserve the semen released by the male goat so that the remainder of the sperm cells that did not fertilize the female goat's egg can still be used to impregnate other female goats.

Dr. Jonathan N. Nayga (as shown in photo) holds a long cylindrical tube, which they refer to as the artificial vagina. As soon as the male goat makes contact with another goat, the artificial vagina will be inserted to the male goat's penis, and will collect the sperm. It all happens in just split seconds since the mating time of the goats happens in just a few minutes.

As soon as the semen is collected, it goes to the laboratory wherein it will be frozen for future use. But first, the sperm cells are being checked (as shown in the computer monitor) to ensure that the cells are of good health, growth, and mobility, and to guarantee a high percentage of healthy pregnancy among goats.

CAMANAVA

DOST brings S&T Fair at NCR-CAMANAVA cluster

By DAVID MATTHEW C. GOPILAN, *DOST-STII*
Photos by GERARDO G. PALAD, *DOST-STII*

Carrying the theme, "Science for the People," the Department of Science and Technology-National Capital Region (DOST-NCR) partnered with DOST's Technology Application and Promotion Institute and the City of Valenzuela to stage the CAMANAVA Science and Technology Fair and Exhibits. The event reached out to the cities of Caloocan, Malabon, Navotas, and Valenzuela, or CAMANAVA, to bring science and technology closer to the people.

Highlight of the three-day event is the turnover ceremony of the Automated Complementary Food Production Facility situated in Valenzuela City Polytechnic College. The facility will be used to produce the complementary food product BIGMO, a rice-mongo powder mix developed by the DOST- Food and Nutrition Research Institute (FNRI). BIGMO will be to children ages 0-5 years old to address malnutrition in the city.

Also included in the celebration are interactive exhibits of Diwata-1, the Philippines' first microsatellite launched to the International Space Station, the science explorer bus, Mad Science Show, PAGASA Mobile Planetarium, a tour in the Historical Museum of the host city, and trade bazaars. Attendees and officials alike were offered with food products developed by the micro, small and medium enterprises

Pop Quiz! DOST Secretary de la Peña tested the basic science knowledge of select students from Valenzuela who attended the event.

1 Engr. Lisa (rightmost) explains to key officials and members of the media the process of converting mongo and rice to complementary food.

2 The crispy, ready-to-eat BIGMO Curls snack with cheese flavor can give 12.3% of recommended energy and 11.8% recommended protein intake of children aged 1-3 years old. BIGMO Curls is one of the complementary food products that will be manufactured at the Valenzuela City Polytechnic College food facility.

3 DOST Secretary Fortunato T. de la Peña (center) leads the ribbon-cutting and turnover ceremony of the automated complementary food production facility with DOST Undersecretary for Regional Operations Brenda L. Nazareth-Manzano (left) and Valenzuela City Mayor Rexlon T. Gatchalian (right).

DOST partners with Valenzuela LGU to fight malnutrition

By DAVID MATTHEW C. GOPILAN, *DOST-STII*

Malnutrition will no longer be a problem of parents in Valenzuela City.

The local government of Valenzuela City received an automated complementary food production facility as part of the celebration of the Regional Science and Technology Week of the Department of Science and Technology-National Capital Region (DOST-NCR) in CAMANAVA (Caloocan, Malabon, Navotas, and Valenzuela) cluster. The Valenzuela City Polytechnic College houses the new facility.

DOST Secretary Fortunato T. de la Peña, who spearheaded the inauguration, said that the food facility aims to manufacture BIGMO, a complementary food for children ages 0-5 years old to address malnutrition. Developed by DOST's Food and Nutrition Research Institute, BIGMO comes in three forms: BIGMO Curls (a cheese-flavored snack), BIGMO ready-to-cook baby food, and BIGMO instant blend.

Secretary de la Peña mentioned that while there are four other similar food production facilities that were already installed in various parts of the country, Valenzuela's facility is the first to be automated. Consequently, "human handling and then contamination is minimized," said Engr. Fred Lisa, chief of Prototyping Division of DOST-Metals Industry Research and Development Center. He added that the facility also has a centralized control system.

While demonstrating to officials and members of the media, Engr. Lisa mentioned that the facility is recommended to process 120 kg of rice and mongo combined in an hour, which is equivalent to 30 grams per sachet of BIGMO. But then, the facility can process the rice and mongo mix up to 180 kg which is 50% more. "An automated operation can finish a day's production in two hours," Engr. Lisa said.

(MSMEs) that were assisted by DOST's Small Enterprise Technology Upgrading Program (SETUP). Meanwhile, the science acumen of junior high school students from CAMANAVA was tested in a quiz contest.

DOST Secretary Fortunato T. de la Peña and Valenzuela City Mayor Rexlon T. Gatchalian graced the event together with other DOST officials: Undersecretary for Regional Operations Brenda L. Nazareth-Manzano, Assistant Secretary for Finance and Legal Affairs Atty. Emmanuel S. Galvez, DOST-National Capital Region Regional Director Jose Patalinjug III, DOST-Science and Technology Information Institute Director Richard P. Burgos, DOST-Metals Industry Research and Development Center Director Engr. Robert Dizon, and DOST-FNRI Director Dr. Mario V. Capanzana.

DOST solutions help raise up disaster areas

Text and Photos by RODOLFO P. DE GUZMAN, *DOST-STII*

DOST Secretary Fortunato T. de la Peña delivers his message on the importance of science and technology to economic development that will reduce inequality in the country. He also led the ribbon cutting that officially opened the celebration with Dr. Marieta B. Sumagaysay, executive director of DOST-National Research Council of the Philippines (NRCP); Engr. Sancho A. Mabborang (4th from left), DOST Region II director; and other S&T stakeholders.

The hands-on head honcho of the Department of Science and Technology (DOST), Secretary Fortunato T. de la Peña, visited a community in Jaro, Leyte that was funneled down by super typhoon Yolanda in 2013 and saw for himself the progress of rehabilitation under the department's Community Empowerment through Science and Technology (CEST) program.

"The CEST program in Brgy. Villaconzoilo in Jaro is a tangible example that science and technology (S&T) are important components in rebuilding communities that are affected by natural calamities like typhoons," said Sec. de la Peña. "It hastens the return to normalcy for the people as well as open more opportunities for livelihood. So I encourage you to continue what you are doing now."

CEST is one of the flagship programs of the DOST that aims to provide livelihood opportunities and facilitates the transfer of science-based know-how and technologies to beneficiaries in communities particularly in the provinces along the areas of education, health and nutrition, water and sanitation, disaster risk reduction, and industry development and livelihood.

The program assisted 158 malnourished children from four barangays in Jaro with the Malnutrition Reduction Program using complementary/supplementary foods and meal management training provided by DOST-Food and Nutrition Research Institute. As a result, the mean weight increase of the children was 0.73 kilograms.

Some 200 households in seven barangays were provided access to potable drinking water with the deployment of Ceramic Water Filters using nanotechnology developed by the DOST's Industrial Technology Development Institute.

A Common Service Facility (CSF) for Stabilized Brown Rice Processing was put up to provide alternative income

The Villaconzoilo Community Association led by Brgy. Chairman Alex Aborita (5th from left) has shown that science and technology are important factors in the success of their livelihood project of growing salad vegetables. The project is assisted by the DOST Region VIII under the Community Empowerment through Science and Technology (CEST) program. Photo shows the nursery (background) for growing vegetable and fruit seedlings like lettuce, asparagus, watermelon and strawberry with DOST Secretary Fortunato T. de la Peña (6th from left); DOST Region VIII Director Engr. Edgardo M. Esperancilla (4th from left); DOST-STII Director Richard P. Burgos (3rd from left); DOST-NRCP Director Dr. Marieta B. Sumagaysay (2nd from left); DOST-Provincial Science and Technology Center-Leyte Engr. John Glenn D. Ocaña (rightmost); DOST Region VIII CEST Coordinator Engr. Ramil T. Uy (leftmost); DOST Region VIII CEST Coordinator; and Lilibeth P. Padilla (4th from right), Public Affairs Unit Head of DOST-STII.

to farmers and provide healthier food options while generating profit of roughly P4 million. Also, a CSF was established for charcoal briquetting using the technology provided by the DOST-Forest Products Research and Development Institute that created alternative income to farmers and promoted agri-waste recycling.

In the area of education and literacy promotion, the CEST program provided STARBOOKS in schools like the Granja-Kalinawan NationaI High School in said town. STARBOOKS is a digital library of S&T information developed by the DOST's Science and Technology Information Institute (STII) that allows students access to information for their research even without internet connection.

Lastly, the CEST program's intervention paved the way for the establishment of the project "Cacao Production with Intercropping System" that involved training of farmers on cacao farm management with intercropping by the Visayas State University. The learnings helped increase the income of farmers. Under this system, the community was able to put up one nursery in Baybay, Leyte and three demonstration farms in Brgy. Villaconzoilo and Brgy. Hiagsam in Jaro, Leyte that have now become an agri-tourism destination in the province.

"We are very honored and very happy to be visited by Sec. Fortunato T. de la Peña because he is the first high official of the present government to visit our place and we are very thankful to the DOST for the assistance they have given us. Starting with only P1,800 in capital in 2010, we now have P25 million in this seven-hectare farm," said Alex Aborita, Barangay Chairman of Villaconzoilo.

Because of the success of the CEST program in Jaro, more interventions are lined up for implementation like the adoption of the e-Trike in Brgy. Olotan in Jaro with a funding of P4.7 million for 20 units that would promote green transportation system and the S&T support for strawberry production in Brgy. Villaconzoilo with a funding of P500,000.

With DOST's CEST program, Leyte experienced another storm, but this time it is a strong downpour of S&T technologies and innovations poised to improve the lives of people in communities that have once thought there was no hope after a calamity.

The project visit coincided with the celebration of the Regional Science and Technology Week 2017 in Eastern Visayas (Region VIII) held September 19-22, 2017 where the secretary was the guest of honor. The science chief was accompanied by DOST Regional Office VIII Director Engr. Edgardo M. Esperancilla together with the directors of Provincial Science and Technology Centers of Leyte, Southern Leyte, Northern Samar, Eastern Samar, Samar, and Biliran. Others who joined the project visit were DOST-STII Director Richard P. Burgos, DOST Region II Director Sancho A. Mabborrang, DOST Region VIII Assistant Regional Director Engr. Ernesto M. Granada, and representatives from DOST-National Capital Region, DOST-NRCP, and DOST-Technology Application and Promotion Institute and members of the media.

Alex Aborita, barangay chair of Villaconzoilo, explains to Sec. de la Peña how the water system they are using to irrigate the vegetable farm works.

DOST-SETUP aids Eastern Visayas entreps

Text & Photos by RODOLFO P. DE GUZMAN, *DOST-STII*

DOST Undersecretary for Regional Operations Brenda L. Nazareth-Manzano stresses the important role of micro, small and medium entrepreneurs (MSMEs) in economic development of the region and she encouraged MSMEs to use science and technology to improve their products and operation through DOST's Small Enterprise Technology Upgrading Program or SETUP.

Island's Best Food, owned by Rosario Amoroto, was declared as the 2017 Best SETUP Adoptor for Region VIII for its calamansi concentrate from fruits grown in Homonhon Island in the province of Eastern Samar.

Small and medium entrepreneurs, particularly in the countryside, remain the engine of economic growth. The Department of Science and Technology (DOST) since 2002 has been offering financial and technical assistance to help them level up their production and become more competitive.

The DOST Regional Office VIII, during the celebration of the Regional Science and Technology Week in Tacloban City held on September 20, 2017 conducted a SETUP Forum to entice micro, small and medium enterprises (MSMEs) to avail of the DOST assistance under the Small Enterprise Technology Upgrading Program or SETUP.

"The SETUP Forum for Eastern Visayas is timely and I have only three messages for our entrepreneurs. First is the message of hope for entrepreneurs to grow their businesses and improve productivity through science and technology because the DOST and other government agencies are here to help."

"Second is the message of anticipation where we are collaborating with other government agencies at the national level like the one with Department of Trade and Industry (DTI) to better improve our services. Third is our challenge to MSMEs to be the engine of change for inclusive growth not only in this region but also for the whole country," said DOST Undersecretary for Regional Operations and SETUP Program Manager Brenda L. Nazareth-Manzano.

DOST Region VIII Director Edgardo M. Esperancilla, on the other hand, said that the DOST through its regional office provides MSMEs with financial and technical assistance and human resource training to improve their productivity by introducing modern machineries to

DOST Region VIII in Eastern Visayas awards Island's Best Food, makers of the calamansi juice concentrate, an innovative food product that was given assistance under the Small Enterprise Technology Upgrading Program (SETUP). On hand to receive the plaque of recognition from DOST Secretary Fortunato T. de la Peña (3rd from left) was its owner Rosario Amoroto (4th from left). Others in photo (L-R) were Dr. Arnaldo T. Amosco Jr., Provincial Director of DOST Eastern Samar, DOST Region VIII Director Engr. Edgardo M. Esperancilla, and representatives of the local government units of Leyte.

automate their operation and improve the quality of their products with high standard packaging.

To further promote SETUP to would-be beneficiaries, two SETUP adoptors shared their experiences with the program on how SETUP was able to help them achieve their goals and increase their income.

"It is important to dream big but start small, and there is no limit to your dreams, just put in hard work and perseverance in your business. It was DTI that told us about DOST and the SETUP program… so DOST provided us with financial assistance for our equipment," said Rosario Amoroto, owner of Island's Best Food and adjudged as the Best SETUP Adoptor for Region VIII in 2017.

Amoroto narrated how they [literally] weathered the storm after Yolanda struck Leyte in 2013 where all their equipment, except for the generator, were wiped out and they had to start all over again.

"The challenges are always there but we had to slowly rebuild after typhoon Yolanda. Our house, equipment, and our plant for the calamansi processing were all gone. We thank the DOST family for their help and moral support that made us heal our wounds and start again," added Amoroto.

Island's Best Food now processes calamansi fruits into ready-to-drink juice, concentrates and jelly that they sell to supermarkets and groceries in the region, in Cebu and selected clients in Metro Manila.

This experience of good tidings was shared by Troy Bumagat, owner of the Trophy Farm Supplies that was awarded as 2016 Best SETUP Adoptor. Trophy Farm availed of DOST assistance in 2014 that improved the productivity of its farm operation in Kananga, Leyte.

"I thank the DOST for finding ways and solutions to problems in farming like the assistance of SETUP in 2014 that enabled us to acquire the automated tunnel ventilation system that increased the productivity of our poultry farm," said Bumagat, a retired Navy officer turned entrepreneur.

Trophy Farm Supplies never rested on its laurels as it pursued other improvements and activities in the farm. The company presently manufactures superior inoculants for composting of agricultural wastes that eliminates foul odor and has implemented Ultra Violet (UV light) Water Filtration System to improve water quality and decrease mortality rate of the birds from 5 percent to only 1-2 percent. This system is an invention of Bumagat that is now being used by other poultry raisers in the province.

"With our partnership with DOST we are now in the process of commercializing our mushroom production that we started in September 2016, another enterprise we introduced in our farm, by mechanizing our operation," added Farmer Troy.

Trophy Farm Supplies now have some 20 different farm activities in its four hectare land that includes poultry raising, vermiculture and composting and planting of high value crops like mushroom, among others.

Today, Bumagat and Rosario are very optimistic that the DOST will continue to assist them and they serve as living examples for entrepreneurs that science and technology, aside from hard work and dedication, are very important ingredients for a successful business – because "science is for the people".

Winning inventions in NorMin excite crowds at S&T tilt

By HYACINTH J. TAGUPA & BENJOE REY B. VISAYAS, *DOST-X*
Photos courtesy of DOST-X

The DOST-X family poses with DOST Secretary Fortunato T. de la Peña, DOST Undersecretary for Scientific and Technological Services Carol M. Yorobe, and DOST-Technology Application and Promotion Institute Director Edgar I. Garcia.

Overwhelmed by Science. These students from Nothern Mindanao Campus express their gratitude and happiness as they heard their school won at the awarding of RICE exhibitors.

Cheers and applause filled the Limketkai Atrium as the winners of the Department of Science and Technology's (DOST) Regional Invention Contest and Exhibit (RICE) were announced. The winning inventions have been crowd-favorites throughout the three-day RICE showcase, which ran concurrently with the Regional Science and Technology Week (RSTW) celebration.

Clinching the top award in the Outstanding Utility Model category was the Dry Grain Picking Apparatus by Consorcio S. Namoco, Jr., Juvy T. Cloma, Gerby C. Rabago, and Reginal A. Surbano of the University of Science and Technology of Southern Philippines (USTP). The inventors received a prize of P30,000 for their brainchild.

Meanwhile, in the Likha or Creative Research category, the Low-Cost Wireless Remote Power Monitoring Device for Transformer Load Management claimed the top spot with a P25,000 bounty. Karl Martin A. Aldueso, Marven E. Jabian, and Kister Genesis M. Jimenez, all from the Mindanao State University – Iligan Institute of Technology (MSU-IIT), were the brains behind the said device.

College students from the University of Science and Technology of Southern Philippines emerged victorious in the Sibol college category.

The top prize for the Outstanding Utility Model went to the team from the University of Science and Technology of Southern Philippines

In the Sibol Student Creative Research category for College, the top slot went to the Air Quality Monitoring and Filtering Device by Christian Grant O. Bunane, Mike Francis N. Caiña, and Genard E. Delfin, with adviser Engr. Wencel Jean Carranza, also of the USTP. The invention won the college team P25,000.

Likewise, P25,000 went to the winning Sibol Student Creative Research for High School, the XYVO: All-natural Sore Throat Lozenges from *Allium schoenoprasum* (Sibujing) Stalk Extract by Verneece Charity F. Amlon, Kiarah S. Garma, Uriah Maxine D. Lumbo, and Angela Rayne J. Torres, with adviser Honey Ritzel G. Barillo of the Iligan City East National High School.

These winning innovations will represent Region 10 in next year's National Invention Contest and Exhibit.

"We have a record-breaking number of participating inventions this year," proclaimed DOST-X Regional Director Alfonso P. Alamban at the awarding ceremony. A total of 99 innovative entries from local inventors were pre-selected from numerous submissions, vying for top prizes in four different categories. This was the highest number of entries in the history of RICE in Region X.

The team from Mindanao State University – Iligan Institute of Technology receives the Likha category first prize.

The winning team from Iligan City East National High School receives the Sibol Award from DOST-X Regional Director Alfonso P. Alamban and DOST-TAPI Director Edgar I. Garcia.

In her keynote message during the opening program, DOST Undersecretary for Regional Operations Brenda Nazareth-Manzano emphasized the recognition and utilization of local inventions.

"The outputs of our innovators merit our recognition," Manzano said, "but more than that, these scientific outputs should be utilized by us, the greater public, to help answer our needs wherever suitable."

She especially addressed the student-participants, describing the budding scientists as "key to the development not just of our country as a whole but of each individual Filipino."

DOST-X has also assisted a record-breaking number of these inventions in applying for Intellectual Property Rights (IPR) support from the DOST-Technology Application and Promotion Institute (TAPI). Some 34 inventions from this year's contest have already been applied for IPR, plus five more in process, for a total of 39 – the highest in the country.

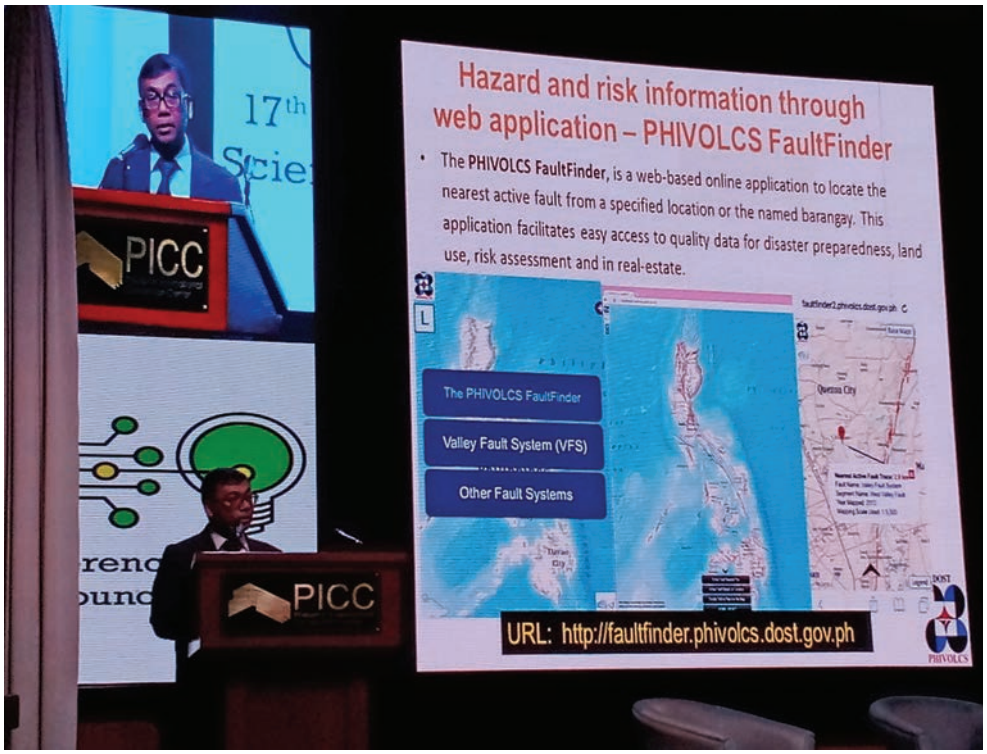
Before the announcement of RICE winners, all the competing inventions were publicly displayed at the exhibit from September 19 to 21. Visitors of all ages flocked to the booths of these RICE entries, where the inventors demonstrated how their creations worked.

Aside from the RICE entries, other displays during the RSTW celebration included successful technologies and enterprises assisted by DOST-X, as well as DOST-X programs and services.

The RICE and RSTW culminated with DOST Secretary Fortunato T. de la Peña congratulating DOST-X and DOST-TAPI, which both spearheaded the invention contest.

The enthusiastic audience at the RICE Region 10 awarding ceremony

The Big One. Department of Science and Technology's (DOST) Undersecretary for Disaster Risk Reduction and Climate Change Dr. Renato Solidum, Jr. explains to delegates of the 17th Conference of the Science Council of Asia the possible occurrence of the so-called "Big One." He also described the West Valley Fault System traversing Metro Manila and nearby provinces and its effect on the possible damage to roads, bridges, and other infrastructure, and the disruption of mass transport system. Dr. Solidum stressed the need to create scenarios by using "disaster imagination" to fully prepare for a strong earthquake and respond accordingly to prevent loss of lives and destruction to properties. The annual conference was held at the Philippine International Convention Center in Pasay City from June 14-16, 2017, co-organized by the DOST-National Research Council of the Philippines and the Science Council of Japan. *(Text and photo by Rodolfo P. de Guzman, DOST-STII)*



DOST's Fault Finder. Dr. Renato U. Solidum Jr., DOST Undersecretary for Disaster Risk Reduction and Climate Change, announces the latest app developed by the DOST-Philippine Institute of Volcanology and Seismology which can determine the location of active faults. The app is part of DOST's disaster mitigation program in preparation for the so-called Big One, a strong earthquake with a possible magnitude of 7.2 that could affect Metro Manila and parts of Bulacan, Cavite, Laguna, and Rizal provinces. The Big One will occur should there be movement in the West Valley Fault. Dr. Solidum was one of the speakers during the 17th Conference of the Science Council of Asia, an annual gathering of researchers and scientists from the ASEAN region. *(Text and Photo by Rodolfo P. de Guzman, DOST-STII)*

SUCs help create enterprises in Calabarzon

By **GERALDINE BULAON-DUCUSIN,** *DOST-STII*

ASSISTANCE FROM state universities in Calabarzon successfully created enterprises in the communities, according to a study presented in a recent international conference.

The country's state universities are potential contributors to economic development. They are the ones who link government programs in agriculture, technology transfer and trade to the communities in the countryside.

In a study on "How can state universities develop an enterprise? Reforms to building viable livelihoods among poor communities" by Rowena DT. Baconguis of the University of the Philippine Los Baños in Los Baños, Laguna, it was found that aside from providing education to improve people's lives, state universities are also required to engage in extension intervention activities that enable them to help community members become more efficient in their livelihood activities.

The research investigated the extension activities of five state universities and 21 enterprises in Calabarzon. The innovations undertaken or promoted by the 21 enterprises were examined and among them 16 enterprises were created as a result of universities' assistance, while four existing businesses were improved, and one enterprise was revived.

It is interesting to note that while most enterprises that were created are in the food industry, such as processed food, condiments, cooked food, processed milk products, food supplement, and processed fruit drink (juice and wine), the existing businesses that were improved are mostly farm-based.

However, although majority (19 out of 21) of the enterprises cited an increase in income attributed to universities' support, only eight of the 19 were able to market their products, recoup their capital and earn continuously even without the universities' marketing and technical assistance. The rest struggled to keep afloat by deriving modest profits.

Enterprises that earned are those that are operated by those with business backgrounds or have talent and passion towards their products.

The communities were taught basic skills on processing, packaging, how to connect with the right contact persons and where to get supply materials. Other trainings were on production technique and integrated farming.

There being a lack in studies related to the Philippines universities' contribution to enterprise development, this research was intended to fill said gap by documenting the experiences of the universities in Calabarzon.

The research was presented in the last 17th Conference of the Science Council of Asia, jointly organized by the Science Council of Asia and the Department of Science and Technology-National Research Council of the Philippines, an agency which promotes and supports basic and problem-oriented researches that are key to providing solutions to national issues and problems.

Researchers develop tool to predict water consumption

By SHEILA MARIE ANNE J. DE LUNA, *DOST-STII*

USING ARTIFICIAL neural networks (ANN), researchers from Mindanao State University-Iligan Institute of Technology (MSU-IIT) in Iligan City, Lanao del Norte developed a forecasting model that can predict water consumption for a local water utility company.

ANN is the technical term for pattern recognition engines which were inspired by research into how our brains work.

At the recently concluded 17th Conference of the Science Council of Asia, held June 14-16 at the Phlippine International Convention Center in Pasay City, MSU-IIT Asst Prof. Lemuel Clark P. Velasco presented the study titled "Medium-term Water Consumption Forecasting using Artificial Neural Networks." His co-authors were Angelie Rose B. Granados, Jilly Mae A. Ortega, and Kyla Veronica D. Pagtalunan, all from MSU-IIT.

The study was done to provide water districts a model that can be used to forecast water consumption, as the water utility company in the locality was in the process of rehabilitating its water distribution operations, including the design of a new pipe system.

Water consumption forecasting is important for water utility companies or water districts for their efficient operation and management of their existing water supply. An accurate water consumption prediction can help water distribution companies to come up with decisions, medium term plans and measures of water resources management, especially during seasons of drought or when water supply is scarce.

"Power utilities are using predictive analytics to predict power consumption. But among the water utilities that we have surveyed, they do not use statistical and machine learning models to predict water consumption. Some are just merely guessing," said Velasco.

This is why the researchers thought of developing a model that could help water utility companies to predict water consumption among the population that they serve—this time, using ANNs.

"Artificial neural networks are currently used for descriptive and predictive models of consumption in power, water, and other historical data," said Velasco.

Basically, artificial neural networks are capable of learning from experience. ANNs are like problem solvers that are highly powerful and effective in making sense out of complex and large volumes of data. Neural networks are applied in a wide variety of disciplines that include classification, prediction, and pattern recognition, among others.

In the study, the researchers used an ANN model to analyze a 16-year data of water consumption from January 1998 to December 2014, and to predict future values using data from January to December 2015. They used five universally accepted categories for water consumption forecasting, which are domestic, commercial, industrial, bulk, and whole water consumption.

Overall, the results found that the ANN model produced results that were within the acceptable error, meaning the forecasted water consumption was found to be very close to the actual water consumption data, except for bulk and industrial categories. This suggests that the ANN model could be a viable technique to use for forecasting the next month water consumption of a highly urbanized locality.

Velasco added that they plan to conduct another study on predictive analytics for water and that they are currently looking for another water utility that they can partner with for the research. He further disclosed that a good positive performance of the upcoming study could prompt the researchers to give their forecasting model to other water utility companies for their use.

Science + Arts = Enhanced Learning

By GERALDINE BULAON-DUCUSIN, *DOST-STII*
Photo by HENRY A. DE LEON, *DOST-STII*

Science merged with arts in education curriculum enhances learning, says Filipino playwright Dr. Anthony Juan, Jr.

"MAKING THE best banana cue is a skill, but showing it on film and preserving it for our future generations to learn is culture," was how Dr. Anthony Juan, Jr. captured the imagination of scientist-participants to the recently held 17th Conference of the Science Council of Asia (SCA), at the Philippine International Convention Centre. The conference focused on science, technology, and innovation.

One of the conference speakers, Dr. Juan discussed the topic "The Body and the Wound: Some Reflections on the Meaning of Research and the Human Being."

In his talk, Dr. Juan floated the idea of offering the creation and development of subjects that merge Sciences with the Arts and Humanities. There have been studies abroad linking the correlation between arts and effective learning, he said.

"It has been been proven by the DANA Arts and Cognition Consortium, a philanthropic organization involved in the support of brain research, which in 2008 assembled scientists from seven different universities to study whether the use of the arts across the curricula affects areas of learning other than the arts," he said.

"The report attributed more interest and more engagement in the learning process on the part of learners of math and reading. The report noted that STEM scores of learners improved. The arts, especially the performance arts, engaged the students because communication is electric as is encodification and decodification, cognition and working memory, critical reading and analysis, and expression and embodiment of ideas," he added.

He said he has worked on the syllabi with various departments and ministries of culture and education here and abroad.

"In one class, imagine the challenge and excitement. Turn a polynomial equation into a dance or a movement piece! The whole class buzzes as the students start assigning the symbols in repeated, variated, contrasted

movements! They have just learned stylistics, movement, and polynomial equation!" he gushed.

He also cited views of the 20th century eminent psychologist from Harvard University, Dr. Jerome Kagan who says, "Arts contribute amazingly well to learning because they regularly combine the three major tools that the mind uses to acquire, store, and communicate knowledge: motor skills, perceptual representation, and language."

Dr. Juan pointed out that there are actually many courses from the humanities and the sciences that can be merged, such as "Three Dimensional Animation and the Concept of Isolation in Robotics; Genetic Engineering and Frankenstein; Frankenstein and Imperialism; Darwin and Realism; Impressionism and the Concepts of Time as Duration; Migration and Performance Ethnology as Methods of Research; The Refugee Crisis, Documentary Theatre, and Methods in Peace Studies and Humane Development, Yu-gen and the Essential Physics in Stage Movement — and so many other comparative studies and interdisciplinary gestalts."

His proposition has actually been done before when he formulated the Arts Across the Curriculum for the Department of Education which was intended for a group of faculty members who took their masters degree in Education and the Arts at the Philippine Women's University. The syllabi were used in some special schools in the country and proved that the use of said method has motivated the students to study. He also used the same syllabi in special target schools in New York City and in the Prison Schools for the Juveniles and the syllabi worked there as well.

What is needed to develop and achieve these learning impacts are sense of imagination and the sense of being alive, he said.

"Visionaries and fools merge in the infinity of the mind. But visionaries look for the plan for humanity. And fools look for human deprecation and destruction," he said.

Listening to Dr. Juan, one is reminded of the American author and playwright, James Baldwin, a respected artist whose strong sense of social justice also manifested in his artistic works.

Dr. Juan has taught at the University of the Philippines for over 30 years and is now a faculty at the University of Notre Dame, South Bend, Indiana, USA. Dr. Juan received many awards, local and international, for his contribution to the arts. He received recognition from the French government twice, at the Chevalier de l'Ordre des Arts et Lettres in 1992 and the Chevalier de l'Ordre National de Merit in 2002.

He is currently working on Richard III and handling workshops for marginalized sectors in Manila. He is likewise preparing for a film on refugees in Rome for 2018 in cooperation with various institutes with the mission of social justice.

The 17th Conference of the SCA was jointly organized by the Department of Science and Technology-National Research Council of the Philippines, the Science Council of Asia, and the Science Council of Japan.

Filipino-developed plant food supplement wins Japanese excellence award

By HANS JOSHUA V. DANTES, *DOST-PNRI*
Photos courtesy of DOST-PNRI

A RESEARCH team from the Department of Science and Technology–Philippine Nuclear Research Institute (DOST-PNRI) recently bagged the 2017 Excellent Research Team of the Year Award by the Japan-based Forum for Nuclear Cooperation in Asia (FNCA). The team was awarded for developing the Plant Food Supplement (PFS) through the successful use of radiation technology.

The Japanese government recognized the project for its great potential in helping spur the development of Philippine agriculture and attaining food security. It is also eyed to help mitigate the effects of El Niño and climate change that ravage farmlands in the countryside.

The research team is led by Career Scientist Dr. Lucille V. Abad who heads DOST-PNRI's Chemistry Research Section. With just 3.2 liters per hectare of water mixed with the right proportion of the PFS, the formulation was proven effective in increasing the yield of rice, mungbean, and other crops by over 20 percent.

Field tests also showed that rice applied with PFS had improved resistance against tungro bacilliform virus and bacterial leaf blight. Further, fields sprayed with PFS had higher survival rate after a violent storm compared with nearby fields that had no PFS.

PFS are developed from natural polymers such as carrageenan, a common industrial ingredient extracted from seaweeds. Irradiation degrades polymers to form natural bioactive agents that can improve the health and increase the growth and yield of various crops. The carrageenan used for the PFS was irradiated at PNRI's state-of-the-art Electron Beam Irradiation Facility in Diliman, Quezon City, the first facility of its kind in the country dedicated to semi-commercial services.

The Plant Food Supplement is developed using radiaton technology by DOST-PNRI scientists and researchers.

Dr. Lucille V. Abad (left, front row), who heads the Plant Food Supplement project, demonstrates the E-beam applications for radiation processing of the PFS during a seminar by the Forum for Nuclear Cooperation in Asia held in the Philippines.

Dr. Lucille V. Abad, Scientist I and head of the DOST-PNRI Chemistry Research Section, receives the Outstanding Research and Development Award for Applied Research (Julian A. Banzon medal) for her outstanding research on "Radiation Modified Carrageenan as Plant Food Supplement."

After successful field experiments on rice which proved the advantages of and benefits from PFS, the PFS project was officially launched in November 2015. The following month, DOST started the widespread testing of PFS in Luzon, Panay Island, Zamboanga, and Davao.

As such, DOST-PNRI produced several tons of PFS for field test purposes and these were applied to thousands of hectares of ricefields in selected provinces of Regions 2 and 3, specifically in Tuguegarao, Cagayan, Ilagan, Isabela, and in Pulilan, Bulacan.

The development of the formula began under a cooperative project with the International Atomic Energy Agency (IAEA) back in 2009. The PFS project was funded by the DOST-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development while the field trials were co-implemented under Dr. Gil Magsino of the National Crop Protection Center of the University of the Philippines Los Baños.

The research team's achievements will be presented at the 18th FNCA Ministerial Level Meeting in Astana, Kazakhstan on October 11 this year. The FNCA is a Japan-led cooperation framework for the peaceful applications of nuclear technology. Among the participating countries in the FNCA are Australia, Bangladesh, China, Indonesia, Japan, Kazakhstan, Korea, Malaysia, Mongolia, the Philippines, Thailand, and Vietnam.

On the left is the PFS-sprayed ricefields which proved much more resilient to lodging compared with the ricefields without PFS (on the right) after the onslaught of a typhoon in Pulilan, Bulacan.

Most Medals in Malaysia
Philippine team nails awards in Malaysian confab

By **ROSEMARIE C. SEÑORA**, *DOST-STII*

"Dare the student to commit mistake. Let them realize that the safest place to commit mistake is in the laboratory or classroom." - Andrew S. Tenorio, Special Science Teacher IV of Philippine Science High School – Bicol Region Campus

IT WAS not the first time that he represented the country in an international conference but for Mr. Andrew S. Tenorio, the experience in representing the Philippines in the 1st International Royal Military College Young Scientists and Conference and Exhibition 2017 (I-RYSCE '17) was indeed special.

Tenorio, a Special Science Teacher IV of Philippine Science High School (PSHS) – Bicol Region Campus (BRC), led the Philippine team composed of 18 students and two other coaches to the said conference. I-RYSCE '17 was organized by The Royal Military College and Malaysia Young Scientist Organization and was held in Kuala Lumpur, Malaysia on July 10-15, 2017.

Winning Filipino students

In the conclusion of the conference, the Philippine team emerged as the country with most number of gold and silver medals won.

A total of 13 medals – five gold, seven silver and one bronze, along with a special award for team Philippines, were won by the Philippine team in I-RYSCE '17.

Under the Physics and Engineering Category, Krystall Nicole B. Vicenten and Daphne Rose S. Molina of the PSHS – Cordillera Administrative Region Campus (CARC) won a gold medal for their study entitled, "Thermoelectric Generator as an Alternative Charger for Smart Phones."

Still under the same category, Nureen Alizah Osbucan of PSHS – CARC also won a gold medal for her research, "Harvesting Rainfall Energy using Piezoelectric Transducer."

Maria Ysabell Angel V. Palma of PSHS-CARC further won a silver for her study, "Air Disc Airconditioning System."

For the Life Science category, Elijah James E. Cal Ortiz of the PSHS-BRC won a gold medal for his study, "Evaluation of Bacteriocin-like Inhibitory Substance (BLIS) Production of Bioluminescent Bacterial Isolate."

Angela Mae Barandino of PSHS-Eastern Visayas Campus (EVC) also won a gold medal for her research entitled "Biodiversity of Foliar Endophytic Fungi Isolated from *Mangifera indica*."

Still under the same category, Cyril Francis Torres Wakit and Piolo Nico Eusebio Mangabat of PSHS–Central Visayas Campus won a gold for their research, "In vitro Bio-efficacy of the Mycelial Cell-free Extract of Beauveria bassiana against Bacterial Soft Rot (*Erwinia carotovora*)."

Justine Che T. Romeron of PSHS–BRC further won a silver medal in his study "Artificial Neural Network-based Philippine Forest Modelling."

Further, Daniel Angelo R. Mirador of PSHS – Soccksargen Campus likewise won a bronze medal for his study, "Antibacterial Properties of Aqueous Soursop (*Annona muricata*) Leaf Extract against *E. coli, S. aureus* and *P. vulgaris*."

For the category Computer Science and Mathematics, Josh Thomas M. Clement, Ryan Izach C. Josue, and Kyle Jeremiah P. Ledesma from PSHS–Western Visayas Region won a silver medal in their study, "Finding the Golden Ratio in Centuries Old Churches in Panay Island - Jaro Cathedral (1874), Pan-ay Church (1692), and Sta. Barbara Church (1760)." They also won the title Best in Poster Presentation.

Further, Patrisha Paris and Maharanee Cuaresma of PSHS–Ilocos Campus won a silver medal in their study, "Alteration of Caesar Cipher Using the Classes of Primitive Pythagorean Triples."

For the category Environmental Science, Abigail Collantes of PSHS–EVC won a silver

medal for her research entitled, "Community Structure of Seagrasses I Cuatro Islas and their Potential Antibacterial activity."

Also, a silver medal was won by Reana Ayn Lachica of PSHS – Soccksargen campus for her study, "Biodegradable Plastic Film using k-carageenan derived from Euchemia cottonii (guso)."

Moreover, Maria Kyra M. Mata of PSHS – Southern Mindanao also won a silver medal for her study, "Coconut husk Powder Extract as Mordant."

The coaches

The two other coaches were Maricel Barnachea of PSHS system–Caraga campus and Ms. Rose Ann Silos of the Soccksargen campus.

"I think I was selected because of our previous success in Young Inventors Challenge 2016 in Putrajaya, Malaysia. We emerged as the grand champion and presented the two most outstanding projects. I am somehow familiar with the travel and experienced supervising a big group of students," Tenorio said.

It was also the Office of the Executive Director of PSHS system that initiated the participation of team Philippines and managed the selection of participants and coaches. The three coaches/chaperones, Tenorio said, were chosen because of their expertise.

As for the selection of the student participants, the research departments of different Pisay campuses endorsed many student researches. Out of the endorsed studies, the Executive Director selected the finalists for the competition.

Participated in by 10 countries, namely Malaysia, Thailand, Indonesia, Iran, India, Laos, Nigeria, Australia, Guam, and Philippines, the said conference aims to develop creativeness and innovativeness among students and provide them a platform to identify young ambassadors of science.

The activity also enhances research culture among the participating schools.

The contest has two stages – the Poster and Exhibition Competition as the first stage and the Oral Presentation as the second stage. Results of the two stages determine the winners of this competition.

Juries were selected from the MYSO, National Defence University, University of Putra Malaysia, and other experts from countries across Asia Pacific Region.

The 117 projects were classified into the following categories: life science (29 projects); environmental science (45 projects); physics and engineering (31 projects), and computer science and mathematics (12 projects).

Creating linkages

Tenorio said that the importance of joining this activity is the creation of linkages.

"We created linkages with different organizations that prioritize inventors' welfare, gifted education and development of research culture among education sectors," he said.

"These linkages help open the door, not just for the PSHS system, but also for other schools to participate in more international exhibits and give more chance for other student researches to be exposed," he added.

For instance, the Philippines was able to create linkages with the Research Centre for Applied Science and Technology based in Indonesia and with the Malaysia Young Scientists Organization.

He said that these linkages also help students to be motivated to continue doing more responsible and meaningful researches.

The participation of the Philippine team in the said competition is also an opportunity to show to other countries the quality of education in the Philippines through science projects and their performances during oral presentation, Tenorio said.

An opportunity of learning

Tenorio also said that joining international conferences is an opportunity to learn from the best practices of other countries.

"Students are exposed to the trends in science and technology globally. Student participants became more motivated to create more researches and inventions which, I believe, our country will benefit in future," he explained.

And speaking of learnings, Tenorio said that one of the things he learned from the trip is that other countries have many active organizations for young inventors, the gifted, and innovators.

"My evidence to this claim is that we received too many invitations from different organizations from a single country," he said.

His advice to help the aspiring student researchers: "Dare the student to commit mistake. Let them realize that the safest place to commit mistake is in the laboratory or classroom."

Tenorio said that here in the Philippines, despite the ability and talent of the students to compete with other countries and win most of the time, we still have a shortage for scientists.

For this, he suggested that the government should continue giving support to the young aspiring scientists.

"I hope our government will continue to support this kind of competition and even extend this outside PSHS system because this will provide big impact and motivation to young scientists," he said, adding that the government should provide a venue for students to experience inventing and researching.

"At a young age, let them experience earning from their inventions, enjoy the prestige of joining research exhibits, let them learn from the research outputs conducted by other young researchers, and make them realize that the product of their research is a contribution to knowledge," he said.

He also said that science related agencies/ laboratories should be accessible to young researchers as these will help address the problem of some senior high school in terms of lack of laboratory.

Having seen the kind of researches presented in the I-RYSCE '17, he encouraged the student researchers to conduct researches that are based from actual problems experienced by the country.

"Be systematic and explore the linkages to avail services of laboratories in local and international scenes," he added.

And lastly, he advised young scientists and researchers not to be afraid to commit mistakes.

"Get out of your comfort zone. Try to learn new fields of sciences. Try to find interconnections between new fields of sciences," he advised.

New PNRI head bats for more knowledge on nuke tech

By ALLAN MAURO V. MARFAL, *DOST-STII*

HE WAS a witness to the development of exciting products in the country's leading nuclear energy research and development institute. He even had a number of engagements with the institute and was well aware of its initiatives that improve the living conditions of Filipinos.

Now he holds the line that steers the institute forward. He is Dr. Carlo A. Arcilla, the new director of the DOST-Philippine Nuclear Research Institute (PNRI) which has the mandate of conducting and promoting, as well as regulating, the use of nuclear technologies and applications in the country.

"In the past, I had some engagements with PNRI directly and indirectly and I have always been amazed with their facilities, equipment and most importantly their R&D projects. All of those are gearing towards improving people's life, strengthening our industries to provide more jobs, and saving us from natural calamities," Dr. Arcilla said.

Now as he leads PNRI, Dr. Arcilla wants to share with every student, every hard working professional, and every person in the barangay the things that he learned and appreciated in the past with PNRI including the benefits of nuclear technologies.

It means that Dr. Arcilla wants every Filipino to see and understand the practical uses of nuclear researches, technologies, and applications in their daily lives. Dr. Arcilla is no stranger in the field of research and development as he spent many years as a professor and director of the National Institute of Geological Sciences in the University of the Philippines-Diliman. He was involved in various research projects, particularly in the areas of environment and climate change adaptation.

But before all of his academic and research feats, Dr. Arcilla was just a simple boy who was born in Virac, Catanduanes. After graduating from a public school in his home province, he was able to study at Philippine Science High School or more fondly called "Pisay." It was at this time that his curiosity on different scientific concepts evolved into a full appreciation of how scientific applications could be instruments in making people's lives much better.

Dr. Carlo A. Arcilla, new director of Department of Science and Technology-Philippine Nuclear Research Institute (DOST-PNRI), aims to change the perception of general public towards nuclear technologies through stepping up their efforts on promotion and communication campaign. *(Text by Allan Mauro V. Marfal and photo by Henry A. De Leon, DOST-STII)*

Dr. Arcilla then went to college at the University of the Philippines where he graduated with a degree of Bachelor of Science in Geology, summa cum laude.

He was awarded a Fulbright scholarship for his master's and doctoral degrees in Geotechnical Engineering and Geosciences respectively at the University of Illinois at Chicago.

The launching pad of Dr. Arcilla's professional career began when he taught at UP Diliman for three years before moving to a Cebu-based mining company. He worked at the latter for four years to do various researches and this became his passport for a Fulbright scholarship.

After that, he got involved in the mining industry for so many years, doing research and consultancy jobs. According to Dr. Arcilla, one of his accomplishments is pioneering a research in carbon sequestration by mineralization in the Philippines. This was carried out in cooperation with Japanese and European scientists. This study demonstrates the substantial trapping of carbon dioxide by natural process in Tarlac, Pangasinan, Zambales, and Palawan areas.

However, one project that he is really proud to be part of is the Nationwide

Dr. Carlo A. Arcilla's oath taking as new director of Philippine Nuclear Research Institute (PNRI) with Department of Science and Technology (DOST) Secretary Fortunato T. de la Peña at PNRI Office in Commonwealth Avenue, Quezon City. (Text by Allan Mauro V. Marfal, DOST-STII and photo by Hans Joshua V. Dantes, DOST-PNRI)

Operational Assessment of Hazards, also known as Project NOAH. As Director of the National Institute of Geological Science of University of the Philippines, he helped in developing hazard maps for flood-prone areas in the country.

"I am just fortunate enough to do the two things I really love which are doing research and being a professor. As a researcher, obviously, I enjoy discovering solutions to our socio-economic challenges. As a teacher, I was not only able to share various knowledge but I was also helping my students achieve their dreams and be successful in their chosen fields," Dr. Arcilla shared.

For his major contributions, Dr. Arcilla received the highest award given by the Philippine Regulatory Commission, the Eric Nebula for the Most Outstanding Philippine Professional in 2014.

Aside from being a professor, researcher, and consultant, Dr. Arcilla is also a businessman. With his broad background, he said he will use all of experiences and knowledge he gained from this field to achieve what he is eyeing for PNRI.

Stepping up nuke energy promotion

Dr. Arcilla shared some of his plans to increase the awareness of public on how nuclear technologies and other processes can contribute heavily in the field of medicine, agriculture, environment protection, and disaster preparedness management.

"PNRI has built positive impact in improving the services and operations of various industries, as well as government agencies for so many years," Dr. Arcilla said.

"However, the people do not know that all of these have been empowered by nuclear process. This is mainly because perception on nuclear does not sound good for most of them, as it is being more associated in various destructive ways."

With this, Dr. Arcilla is determined to show all the good sides of nuclear technology in every doorstep of the neighborhood.

"If possible, I want every hospital to have signage educating the patients, relatives, and other visitors that the process and equipment have been improved and enhanced by nuclear researches and applications," he said.

Dr. Arcilla is also doing all means to ensure the feasibility to the market of future R&D projects of PNRI to identify the kind of approach that will sell to the industry.

"As I have mentioned a while ago, PNRI is doing a lot of good things but not gaining so much attention. Putting premium on the market research of our future projects could be a great help so that before we conduct we know already that there is a growing demand, and it also makes the process of transferring technologies easier," said Dr. Arcilla.

Strengthening the Core

For Dr. Arcilla, before he could achieve those he envisioned for PNRI, he needs a workforce armed with advance knowledge and skills in their respective fields and specialization.

"If you have asked me how I would like to see PNRI five or 10 years from now, I want majority of my staff to have master and PhD degrees. Putting my PNRI researchers and scientists in a position to learn with the brightest people in the world and to have access to various advance information available, it is really a huge boost for us to provide top-notch quality services and assistance to various industries," he said.

(After the author of this article conducted the interview with Dr. Arcilla, he proceeded immediately to PNRI Conference Room to lectures his employees on how to get masteral degrees abroad.)

Dr. Arciila said that he wants to build an environment for PNRI, where all are encouraged and motivated to have career growth in their respective field and specializations.

Prior to Dr. Arcilla's official assumption as PNRI Director, he knew already what kind of agency he would be leading, as well as the plans he needed to do to put PNRI into a higher level.

It includes instilling into the mind of the general public how PNRI projects and nuclear applications can offer alternative and effective methods to improve services of various industries as well as arming his people with the skills and knowledge that they need to give quality and efficient services and products for every Filipino, of course with the help of nuclear technologies.

PH team bags 6 medals, stays 17th rank worldwide in Int'l Math Olympiad

By MARCO D. MELGAR, *DOST-SEI*

A MEDAL for each of the six members of the Philippine team nailed the country to a steady number 17 out of 111 country-participants to the 58th International Mathematical Olympiad (IMO) held recently in Rio de Janeiro, Brazil. Overall, the Philippine team won three silvers and three bronzes in this international competition regarded as the grandest stage of mathematics.

Leading the bemedalled pack were Kyle Patrick Dulay of Philippine Science High School (PSHS) – main campus, Albert John Patupat of De la Salle University Integrated School, and Farrel Eldrian Wu of Makati Gospel Church (MGC) New Life Christian Academy, who all garnered silver medals.

Meanwhile, Shaquille Wyan Que of Grace Christian College, Sean Anderson Ty of Zamboanga Chong Hua High School, and Clyde Wesley Ang of Chiang Kai Shek College secured bronze medals to complete the medal haul.

Guiding the team were Dr. Richard Eden of Ateneo de Manila University, and Dr. Louie John Vallejo of University of the Philippines Diliman, both from the Mathematical Society of the Philippines (MSP).

From number 36 in 2015, the country climbed to its all-time highest rank of 17 when the Philippine team bagged two golds in last year's IMO. Wu and Dulay got a gold each at the 57th IMO, and toppled the other 600 participants from more than 100 countries.

Meanwhile, Department of Science and Technology – Science Education Institute (DOST-SEI) Director Dr. Josette Biyo, congratulated the 2017 team for maintaining "an equally best performance" from the previous year.

"The science community had high hopes after our great feat last year and our team certainly did not disappoint us. We performed very well and maintained a very high ranking. These kids are truly some of among the best in the world and we are very proud of them," she said.

First held in 1959 in Romania, the annual IMO has been held in various countries around the world. Participating countries send a maximum of six contestants who are guided by a team leader and a deputy team leader. Each participant, during the contest, solves three difficult and original math problems for two days at 4.5 hours per day. The complex math problems cover geometry, algebra (polynomials, inequalities and functional equations), number theory, and combinatorics.

The Philippine team at the 58th International Mathematical Olympiad. (*Photo and text from DOST-SEI.)*

DOST-SEI, along with MSP, jointly organized the country's participation to the IMO, as well as the Math Olympiad Summer Camp held in February that served as the training ground for the team. There, 22 national finalists from the 2017 Philippine Mathematical Olympiad were screened for the six slots in the Philippine Team. Other sponsors of the team include Hyundai Asia Resources, Inc. Foundation, and Manulife.

Meanwhile, in the recent International Chemistry Olympiad (IChO) held in Nakhom Pathom, Thailand, the Philipine team composed of students from the PSHS system bagged two bronze medals.

Arthur de Belen from the main campus, and Charles Bartolo from Central Luzon campus nabbed a bronze each in their debut participation at the IChO.

Others in the team were Israel Aguba (main campus) and Keren Duque (Cagayan Valley campus), along with delegation head Dr. Jose Andaya (CALABARZON campus), and coach Xandra Junio (Cagayan Valley campus).

Dr. Nestor Valera, associate professor of Chemistry at Ateneo de Manila University and former president of the Kapisanang Kimika ng Pilipinas, Inc., said the Philippines joined the competition to develop future Chemistry experts in the country. He said the participation was a victory in itself and the medals were an added treat. Valera, along with De la Salle University's Dr. Eric Punzalan, led the assembly of the Philippine team.

Dr. Biyo congratulated the team and expressed support in its future competitions.

"This, along with every other great performance of our students in international science and mathematics competitions, is a welcome development as we pursue further excellence in these crucial fields of science. We thank all the people behind the team's success and the science community will continue to provide support in these endeavors," Biyo remarked.

Big Dreamers

The DOST Scholar-Graduates in Bicol Region

By DOMINGO A. PEÑA, *DOST-V*

THESE TWO Department of Science and Technology (DOST) scholars who graduated with honors know that no one can stop them from dreaming big.

The Bicol Region is home to bright scholars and leaders. Through the years of scholarship program implementation, Bicol has been consistent in producing high number of qualifiers and scholar-graduates. In the last academic year, 191 Bicolano scholars proudly marched on stage to receive their college diplomas in various state universities and colleges, as well as higher education institutes, in Bicol. Of the total graduates, 62 were outstanding academic achievers and graduated with Latin honors and academic distinctions.

Two of these graduates, who are DOST scholars, candidly shared their stories of struggles, challenges, hopes and dreams.

Joan H. Reluao, 20 years old, graduated magna cum laude in the program Bachelor of Secondary Education major in Biological Science at Sorsogon State College. She was also the class valedictorian. She had a simple and modest family, and her father, a tricycle driver, is the family's sole breadwinner.

"I was able to make it through college because of the scholarship I received from DOST from 2015 to 2017," Reluao enthused. She added that it lightened her financial burden and enabled her to study well without worries.

Challenges became significant part of her college life. "Taking on the frustration of failing tests, going extra miles to survive my classes, and dealing with a cluster of problems outside my academic world left me drained of every bit of my flowing energy," she said.

The journey of being a DOST scholar taught her to strive for excellence in everyday living to make way for better opportunities and better destinations in life.

"Having been blessed with so much, we, DOST scholars are expected to give more and be more for our nation," she concluded.

Joan H. Reluao graduated Magna Cum Laude from Sorsogon State College.

Jonnabelle A. Valencia graduated Cum Laude from Bicol University

Another scholar Jonnabelle A. Valencia of Rawis, Legazpi City, Albay graduated cum laude from Bicol University (BU) in the program Bachelor's Degree in Chemical Engineering.

She was an active student leader and a former editor-in-chief of Helion Flare, the official publication of the BU Chemical Engineering Department. She is a self-confessed bibliophile and can't live without the Word of God.

Looking back at her college life, she revealed, "When stressed with overwhelming academic requirements, I take a break, buy a lot of foods, go by the sea, and write everything I feel," she said. It is during this time that she works full of motivation, learning, and life.

"My life was never a smooth-sailing journey. The lowest point happened in 2015 when my Papa got sick. He needed to undergo an operation to eliminate his kidney stone. We were financially challenged coming from a humble family and for this, my other sister was forced to stop schooling. My DOST scholarship privileges were a great help to our family as we experienced this difficult situation," she shared.

With so much gratitude in heart, she said that, "DOST scholars like myself have the prime responsibility to multiply the kindness and show compassion to the needy, the last, the least and the lost. The different Scholars' Summit we attended helped us to be motivated and soar higher," she added.

Reluao and Valencia are just two faces of the many DOST scholar-graduates who will eventually become agents of change in our society. They do not just have the intellect, but most importantly, they have the heart to render service to this beloved country.

DOST & UNWFP partnership to install 112 STARBOOKS in 9 provinces

By ALLAN MAURO V. MARFAL, *DOST-STII*
Photos by JEFFREY E. CENTENO, *DOST-STII*

OVER A hundred schools in nine selected provinces are about to receive science and technology (S&T) digital libraries to help students in their research and studies. The partnership between Department of Science and Technology-Science and Technology Information Institute (DOST-STII) and United Nations World Food Programme (UNWFP), sealed through a memorandum of agreement (MOA), just made this forward leap possible.

At the heart of the agreement is the UNWFP's donation of 112 computer units installed with STARBOOKS to be distributed in selected nine provinces in the country.

STARBOOKS, or the Science and Technology Academic and Research-Based Openly Operated Kiosks, is a stand-alone digital S&T library that contains hundreds of thousands of local and international materials including journals, articles and videos in various disciplines such as Science, Mathematics, Enterprise Technology and Disaster Risk and Reduction Management. It also features interactive lessons and games on S&T courtesy of DOST-Science Education Institute. STARBOOKS operates offline and its contents are accessible even without internet connection.

The identified beneficiaries under this MOA are the secondary schools and local government units which are located in the provinces of Benguet, Batangas, Laguna, Sorsogon, Misamis Oriental, Davao Oriental, Cagayan, Maguindanao, and Iloilo. Deployment will be from August to December this year.

Meanwhile, DOST-STII and DOST regional offices will handle the installation of STARBOOKS in the identified sites as well as the trainings for technical staff, librarians, and possible users.

One of UNWFP's focus areas is on climate change adaptation which includes knowledge management. According to Matts Persson, ad interim country director of UNWFP, STARBOOKS fits the bill in the area of knowledge management.

"We have observed that STARBOOKS has been one of best practices in government in promoting scientific information in the local level," Persson said. "We hope that this partnership would be instrumental not only in equipping many Filipinos on science-based knowledge but also on disaster risk management as well."

Meanwhile, DOST-STII Director Richard P. Burgos said, "We are very grateful that we are expanding the deployment of STARBOOKS to 112 sites in the provinces. Thank you to the UN World Food Programme for acknowledging the value that we bring in to capacitate students, professionals, as well to LGUs (local government units) on understanding and realizing the practical benefits of science and technology to their respective lives."

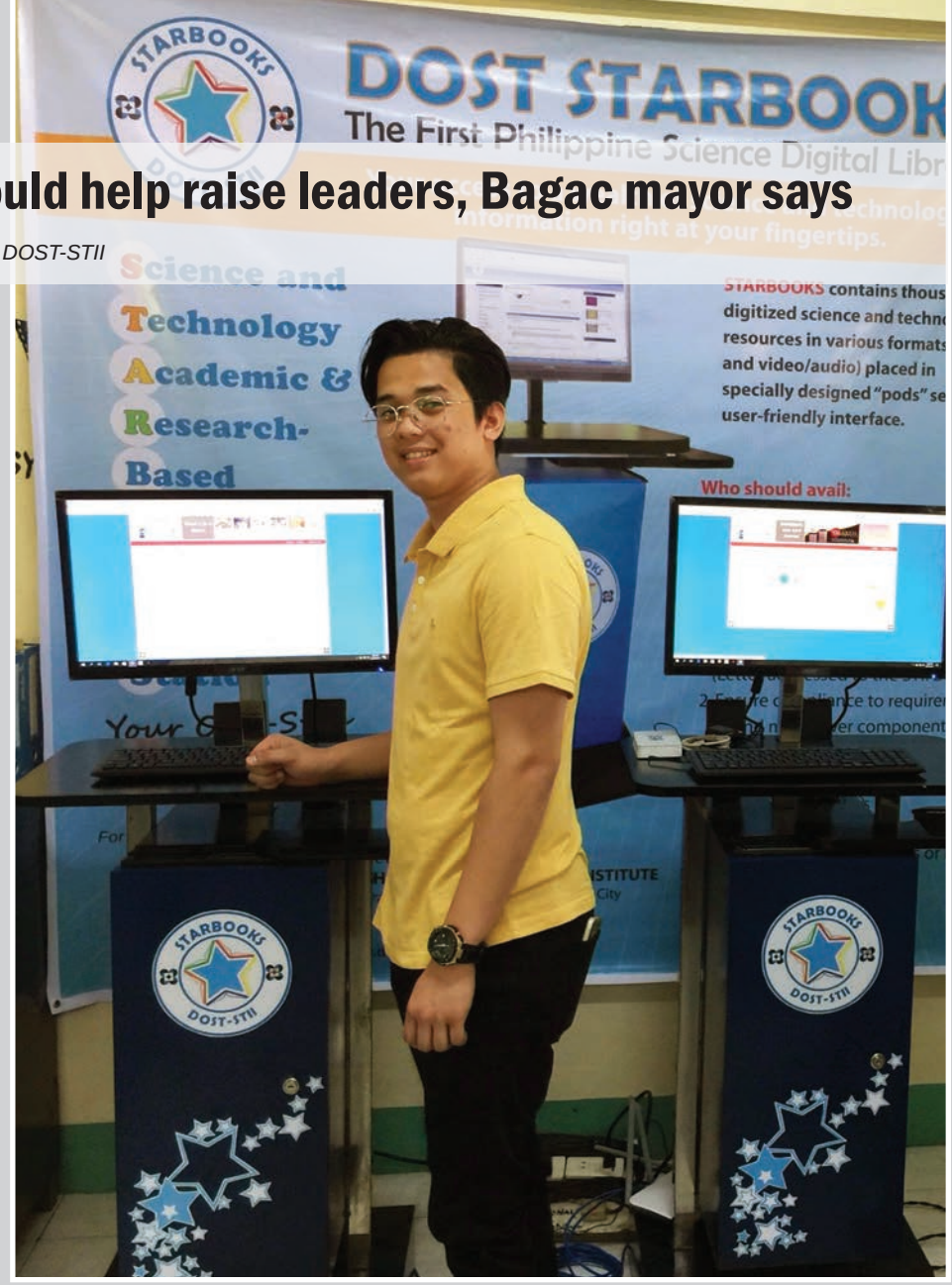
Since its launching in 2011, STARBOOKS has received various local and international recognitions such as the 2015 Presidential Citation for Innovative International Library Projects by the American Library Association and the 2015 Outstanding Library Program of the Year Award by the Philippine Association of Academic/Research Librarians Inc. Recently, STARBOOKS knocked gold and silver awards in separate categories in the 52nd Anvil Awards.

Currently, STARBOOKS is installed in 2,010 sites all over the country as of October 2017. The Super STARBOOKS version is available online and a mobile application is already being developed to make STARBOOKS more accessible to more people.

For more information about STARBOOKS, email all inquiries to dost.starbooks@gmail.com or starbooks@stii.dost.gov.ph or call telephone numbers (632) 837-2071 local 2135, (632) 837-2191to 95 local 105/106, (632) 837-2071 local 2130.

DOST's STARBOOKS could help raise leaders, Bagac mayor says

Text & photo by ALLAN MAURO V. MARFAL, *DOST-STII*



Mayor Louise Gabriel del Rosario of Bagac, Bataan graced the recent turn-over ceremony and orientation of STARBOOKS units in Bagac National High School in Bataan province. In his statement, Mayor del Rosario recognized the potential contributions of STARBOOKS in their area, particularly in nurturing their students to become future engineers, doctors, and scientists.

"STARBOOKS CAN nurture young people in Bagac to become future leaders and innovators," Mayor Louise Gabriel del Rosario of Bagac, Bataan said in a recent installation of the science and technology (S&T) library in his town. "As such, it would help them someday to create many jobs and livelihood opportunities for their constituents."

Short for Science & Technology Academic and Research-Based Openly Operated Kiosks, STARBOOKS is a digital science library developed by Department of Science and Technology-Science and Technology Information Institute (DOST-STII) to equip different public schools with valuable learning resources on S&T.

Mayor del Rosario told this after participating in separate turnover ceremonies of STARBOOKS units and orientations recently in Emillio C. Bernabe National High School, Saysain National High School, and Bagac National High School, all in Bagac town in Bataan.

Mayor del Rosario saw STARBOOKS's important role in providing quality education and how it could translate in producing highly-skilled professionals in their area.

"Creating infrastructure for conducive learning is one of our priorities. We would like to build an environment wherein our students here in Bagac are in comfortable situation and inspire to gain knowledge in various disciplines and with STARBOOKS, we found a perfect partner," said del Rosario.

Del Rosario said that STARBOOKS could aid them to resolve two issues prevailing in their public schools: limited learning materials and weak internet connectivity.

"As STARBOOKS contains numerous information materials on science, mathematics, enterprise technology and it can be accessible even without internet (connection), it upgrades the services offered by our library. It makes more appealing for students to visit often their respective library because of STARBOOKS," said del Rosario.

Seeing the students' enjoyment and great level of curiosity as they explore the content of STARBOOKS, Mayor del Rosario is confident that their students could develop deep appreciation and understanding on the practical uses of science and mathematics in their lives.

"With the help of STARBOOKS, I am hoping that many of our students will be motivated to become engineers, doctors, and chemists in the future and lead us in finding solutions to some of the problems and limitations we experience here in Bagac," said del Rosario.

Meanwhile, Alfon B. Narquita, senior science research specialist from DOST-STII, shared during the orientation the various local and international recognitions received by STARBOOKS in recent years such as the Presidential Citation for Innovative International Library Projects awarded by American Library Association in 2015 at the International Librarians Reception at the San Francisco Library in San Francisco, California. STARBOOKS also won gold and silver awards in separate categories in the 52nd Anvil Awards.

Currently, STARBOOKS is installed in 2,010 sites all over the country as of October 2017. The Super STARBOOKS version is available online and a mobile application is already being developed to make it more accessible.

For more information about STARBOOKS, email all inquiries to dost.starbooks@gmail.com or starbooks@stii.dost.gov.ph or call telephone numbers (632) 837-2071 local 2135, (632) 837-2191 to 95 local 105/106, (632) 837-2071 local 2130.

oneSTore.ph

DOST's one-stop online shop for tech-assisted enterprises

By SHEILA MARIE ANNE J. DE LUNA, *DOST-STII*

Would you like to buy an e-firecracker that won't get you in trouble with the law? Are you looking where to buy Civet coffee? How about a bamboo eco-speaker? Or perhaps some innovative products made by local inventor-entrepreneurs or "inventrepreneurs"?

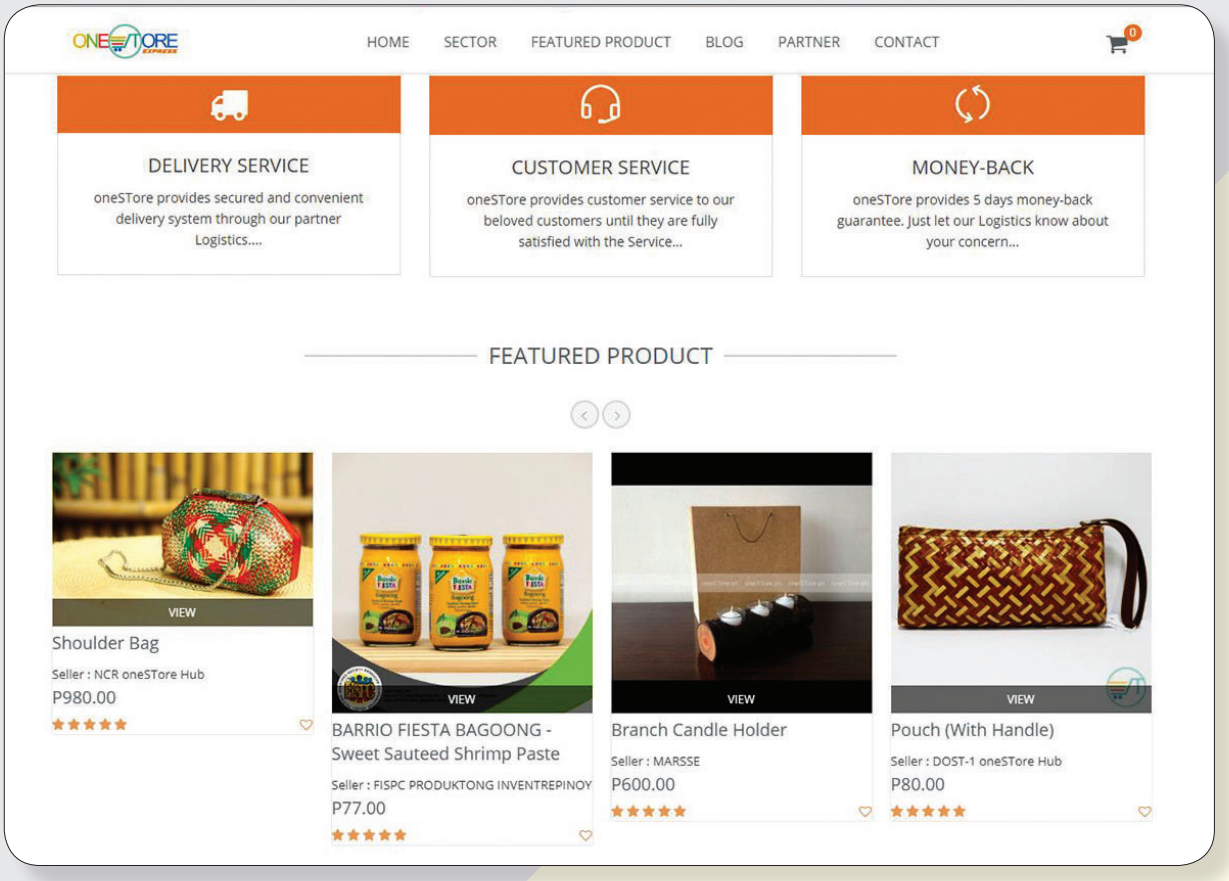
You don't have to search far and wide for these distinct Filipino-made products made by micro, small and medium enterprises (MSMEs) that were assisted by the Department of Science and Technology (DOST) through the Small Enterprise Technology Upgrading Program or SETUP.

All you have to do is go to oneSTore.ph, pick the product you want from a wide range of industries like food, agriculture, furniture, handicrafts, metals, among others – then pick a convenient payment method for you, and simply wait for the product to be delivered right at your doorsteps!

e-Commerce for MSMEs

There is no denying the fact that e-commerce is a thriving industry in the country. Hence the birth of oneSTore.ph, an e-commerce web application that is intended to help DOST assisted MSMEs reach a wider scope of audiences and help grow their target market.

The concept of putting up an online e-commerce website for DOST-assisted MSMEs was an initiative of former DOST Secretary Mario G. Montejo. It was developed by its pilot region, DOST-



Regional Office II headed by Regional Director Sancho A. Mabborang, also project leader of oneSTore.

"The online e-commerce platform's mission is to promote quality products thru oneSTore.ph and increase the market competitiveness of MSMEs," said Mabborang. "It also aims to build relevant information to facilitate e-marketing of MSMEs and help increase their potential income."

Since oneSTore's establishment in July 2015, its product catalog has grown from 200 to more than 10,000 products. Data provided by the oneSTore team shows that as of writing, oneSTore has an accumulated total online sales of P1.2 million and walk-in sales of P39.2 million.

Support to SETUP adoptors

Through SETUP, DOST's flagship enterprise program for MSMEs, Filipino entrepreneurs are given the chance to improve their product quality and business by utilizing and adapting technological innovations and scientific processes.

But even with increased productivity and competitiveness in the market, a lot of these tech-assisted MSMEs find it difficult to move their products in the market. Thousands of these products and services have limited access to their target customers and the lack of exposure is hurting the development and expansion of their businesses.

"There are thousands of MSMEs assisted by DOST and they contribute to increase the country's income and employment. This is why DOST extended its assistance from technical, through programs such as SETUP, to marketing, through oneSTore," Mabborang explained.

The growing consumer demand and use of the online store paved the way for the need to put up oneSTore hubs, which are physical shops where customers can walk in to buy products, and where entrepreneurs can conveniently deliver orders to be processed for delivery.

There are currently 11 oneSTore hubs that can be found in Quezon City, La Union, Pangasinan, Batanes, Quirino, Isabela, Nueva Vizcaya, Cagayan, Cebu, and Tacloban.

Although oneSTore.ph is accessible outside the country, the website does not facilitate international transactions at the moment. "Had there been an international order, it is the product's manufacturer's discretion whether or not to carry out the transaction," Mabborang said.

He added though that oneSTore is currently in the process of expanding and exploring new options for a more seamless process of carrying out international transactions as well.

New developments, partnerships

Two years after its launch, there are new developments that are shaping up at oneSTore.ph, like a platform that will carry out large volume purchasing. "The oneSTore Express team is currently developing the oneSTore Exchange, which is aimed to carry out B2B transactions," said Mabborang.

Their team is also developing an IOS app, in addition to its existing android app, which they believe can potentially boost orders and sales since majority of e-transactions are done using mobile devices. Plans to distribute vendo machines in different parts of the country are also in the pipeline, revealed Mabborang.

To carry out its mission to help Filipino MSMEs, oneStore has also forged partnerships with third party service providers to make the transactions more efficient. The online store currently has partnerships with Land Bank of the Philippines, Air 21, 2Go Express, and Filipino Inventors Society Producer Cooperative, wherein the latter established a oneSTore hub featuring inventions and innovations made by Filipino inventreprenuers.

The said partnerships with third party service providers have made oneSTore transactions more convenient and seamless, according to Mabborang. "Not only do the partners improve the transaction flow but they also increase the trust from the customers since the partners are established in their respective fields," he added. And with plans for expansion and development, the oneSTore team leader believes that more partnerships will soon be established.

Because of its many achievements in the e-commerce industry, oneSTore.ph has already received several awards such as the Golden Globe Annual Awards for Business Excellence, National Customers' Choice Awards, Benita and Catalino Yap Foundation Innovation Awards (finalist), and recognition from the World Class Philippine Council.

Internationally, oneSTore has been featured in the 2016 E-commerce Show, where e-commerce key-players all over the world get together annually.

OneLab
One Laboratory. Worldwide

OneLab

DOST's one-stop hub for lab services

By **JASMIN JOYCE P. SEVILLA**, *DOST-STII*

DOST officials and personnel that manage the DOST-OneLab project nationwide (Photo by DOST-IX)

Now having samples tested in a lab is no longer a hassle. Wherever you are in the country, just bring your sample to the nearest laboratory accredited by the Department of Science and Technology (DOST) and you'll get your results the soonest time possible.

With the setting up of DOST's OneLab project, clients from the industry, business sector, and the academe can have a more convenient laboratory testing and calibration experience. No more expensive, tiresome, and time-consuming travel from one lab to another to complete testing needs.

What is OneLab?

Launched in 2014, OneLab addresses the issues that come with laboratory services in the country. Clients, through OneLab, can have all of their laboratory testing and calibration needs in one centralized touch point.

OneLab virtually integrates all of the DOST's regional and research institutes' laboratories, including other non-DOST laboratories across the country. They are linked in a single network to provide easy access to the public.

These laboratory services are critical in the product development and quality assurance requirements of the micro, small, and medium enterprises. Likewise, these services are crucial to public institutions and local government units in addressing public welfare concerns and consumer protection. The services

are also important in the research and development activities of the academe.

Also, clients who use OneLab are assured of a high-quality service since the networked laboratories are all internationally-recognized and are ISO 17025:2005-accredited (General Requirements for the Competence of Testing and Calibration Laboratories).

How does it work?

OneLab is an information technology-based system with six operating components: (1) data management; (2) sample management; (3) resource management; (4) equipment and supplies inventory; (5) customer portal; and (6) web services.

With an extensive list of all the testing services of the member-laboratories plus reasonable cost of the tests, OneLab will surely put customers at ease in using this platform. OneLab likewise offers easy-to-understand instructions on testing requirements. As soon as the customer hands in the samples to the nearest OneLab member laboratory, OneLab takes everything from there. Though the procedures needed may not be available in a certain laboratory, it can still accommodate the customer's request. The lab receives the samples and refers it to the nearest laboratory that has the needed facilities. It also takes care of the transport and analysis of the sample.

And this is not even the best part yet -- OneLab also gives its customers an access to track the status of their test requests through the Customer Portal which is available on three platforms (web, android, and iOS). The customers just need to sit and wait until the results are in.

How's the project so far?

OneLab was launched three years ago and put online the Referral System last 2015. The Online Referral System has already facilitated 153 referrals of 434 samples that require 575 tests and calibration. Further, OneLab has maintained an above 90 percent satisfaction rate from customers.

OneLab intends to expand its service offerings and widen its reach by including more non-DOST laboratories to its network to provide more options to its customers. Currently, seven laboratories formally signed the Memorandum of Understanding with DOST. These are the: (1) Department of Health (DOH)-National Reference Lab, (2) DOH Food and Drugs Administration, (3) UP-National Institute of Health; (4) SGS Philippines Inc.; (5) F.A.S.T Laboratories; (6) Philippine Institute of Pure and Applied Chemistry; and (7) Department of Agriculture - Fertilizer and Pesticides Authority. Six more laboratory units will be formally joining OneLab this year.

Early this year, OneLab was recently awarded the Benita & Catalino Yap Foundation Innovation (BCYF) Award under the government category. The BCYF recognizes innovative products, services, technologies, or initiatives that transform organizations through improvements that are sustainable, demonstrable, and measurable.

Behind the remarkable quality of service of OneLab is a team that pushed the project to become internationally recognized and accredited to ISO 17025:2005. Under the leadership of Sec. Fortunato T. de la Peña, the OneLab advocates include former DOST-IX Regional Director and now DOST Undersecretary for Regional Operations Brenda L. Nazareth-Manzano, DOST-Industrial Technology Development Institute Director Dr. Ma. Patricia V. Azanza, and cluster heads Dr. Julius Caesar V. Sicat (Northern Luzon), Dr. Alexander R. Madrigal (Southern Luzon), Engr. Rowen R. Gelonga (Visayas), and Dr. Anthony C. Sales (Mindanao), the regional directors of DOST III, IVA, VI, and XI respectively.

DOST's programs on track with Philippine Development Plan 2017-2022

By RODOLFO P. DE GUZMAN, *DOST-STII*

No more poor Filipinos by 2040. This is the vision of the Department of Science and Technology (DOST) in keeping with the administration's Philippine Development Plan 2017-2022 that envisions economic prosperity for all Filipinos.

DOST's various programs and activities, spurred by science, technology and innovation, are the vehicles that will help bring the country towards economic prosperity.

DOST Secretary Fortunato T. de la Peña said that by 2040, "the Philippines shall be a prosperous, predominantly middle-class society where no one is poor, our peoples shall live long and healthy lives, be smart and innovative, and shall live in a high-trust society."

DOST anchors its programs on "Ambisyon Nation 2040" that the current administration projects for its 25-year vision for the country. Guided by its adage "Science for the People", the DOST has been going places to reach out to people of various socio-economic levels of the society.

On the right track

To address food security, the DOST-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development has implemented programs like Itik Pinas (improves egg-laying performance of the Philippine mallard duck from 55 to 70% suited for 'balut' processing), ZamPen Native Chicken (organically raised), and Swine Genomics (improved breeding stock), among others.

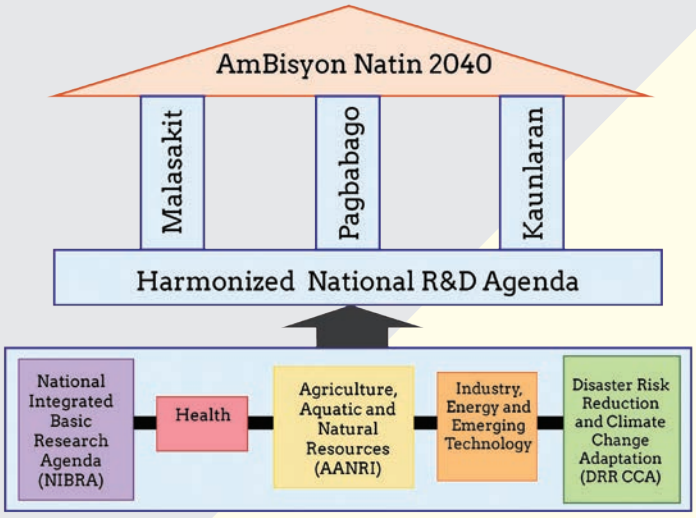
The DOST-Philippine Council for Health Research and Development, meanwhile, developed new technologies using ICT tools like the RxBox (a remote diagnostic system); the Tuklas Lunas (Drug Discovery) program with state universities and colleges as research hubs in the regions to develop natural drugs using plants endemic in the provinces; and the Ovicidal-Larvicidal (OL) Trap, a simple contraption used to reduce population of the dengue carrying mosquito *Aedes aegypti*.

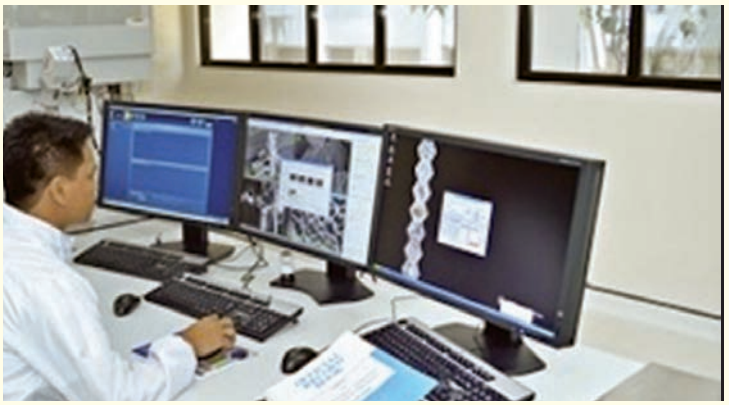
Strengthening R&D facilities

To address various needs, from agricultural productivity to health research and practical use of nuclear radiation, the DOST established several R&D facilities. One facility is the Philippine Genome Center (PGC) which serves as center for basic and applied research in developing health diagnostics, therapeutics, DNA forensics, and preventive products, and in improving crop varieties.

Another facility is the NanoLab which provides R&D opportunities and technical services to local industries via world-class equipment and devices like the high-resolution field emission transmission electron microscope. The NanoLab is the only one of its kind in the Philippines.

The DOST-Philippine Nuclear Research Institute too has several irradiation facilities like the Cobalt-60 Multipurpose Irradiation Facility and the Electron Beam Irradiation Facility for food irradiation, medical products sterilization, and for research purposes.





Boosting economic drivers

To spur business activity, DOST implemented the Small Enterprise Technology Upgrading Program or SETUP. From 2002 until 2016, SETUP has helped 4,363 small entrepreneurs with a total assistance amounting to P3.336 billion and generating 167,939 new jobs, according to Secretary de la Peña.

The Food Innovation Centers, established in the countrysides, are equipped with locally fabricated food processing equipment that enable micro, small, and medium entrepreneurs to develop new food products of export quality. This is supported by the OneStore, a web portal for business-to-business transactions, and the OneLab, a virtual network of laboratory testing facilities scattered all over the country.

In 2013, the Advanced Device and Materials Testing Laboratory was put up to help the local semiconductor industry. Two years later in July 2015, the Electronics Product Development Center was launched equipped with an Anechoic Chamber that conducts electromagnetic compatibility tests for electronic devices like digital cameras. The other facility is the Die and Mold Solutions Center to aid the tool-and-die industry.

To keep communities safe from natural hazards, the DOST established the Nationwide Operational Assessment of Hazards (NOAH) program that uses modern disaster science technologies, and flood hazard mapping under the Disaster Risk and Exposure Assessment for Mitigation (DREAM) project. Both NOAH and DREAM received international awards for their unique features.

On April 27, 2016, DOST launched the first Filipino-made microsatellite called Diwata-1, which is capable of assessing the extent of damage during disasters, monitoring bodies of water and vegetation, and observing large-scale weather patterns.

S&T infrastructure support and human capital development

Back on the ground, the DOST-Technology Application and Promotion Institute assists inventors and innovators in securing intellectual property rights through patent registration and commercialization of their inventions.

The Philippine Council for Industry, Energy and Emerging Technology Research and Development implements the Technology Business Incubation program as one of the strategies to promote innovation and technopreneurship in the country.

The DOST also invests heavily in human capital with scholarship grants for undergraduate and post graduate studies in STEM with cross-border education programs. The OneExpert program provides a digital platform for free exchange of S&T information provided by a pool of S&T experts. Lastly, the Balik (Return) Scientist Program provides incentives for Filipino scientists, engineers and innovators to return to the Philippines and share their expertise here.

Pushing the envelope

With the help of the legislature, DOST continues to push the envelope further by rallying for enactment of S&T-related laws: 1) the Science for Change Program; 2) National Measurement Infrastructure System Amending RA 9236 or the National Metrology Act of 2003; 3) Act Adopting Innovation as Vital Component of the Country's Development Policies to Drive Inclusive Development, Promote the Growth and National Competitiveness of MSMEs; 4) Act Strengthening the Balik Scientist Program; 5) Act Creating the Philippine Space Agency; and 6) Act Providing for a Comprehensive Nuclear Regulation, Creating for the Purpose of the Philippine Nuclear Regulatory Commission.

DOST's support to MSMEs reaches P3.3B

By RODOLFO P. DE GUZMAN, *DOST-STII*

Department of Science and Technology's (DOST) assistance to micro, small and medium enterprises (MSMEs) now totals P3.336 billion, 15 years after it launched its biggest program supporting entrepreneurs.

The program, called SETUP for Small Enterprise Technology Upgrading Program, has, likewise, helped 4,363 MSMEs, according to DOST Secretary Fortunato T. de la Peña. SETUP was established to help MSMEs level up their operations and be at par with ASEAN neighbors.

"Much has been said about the crucial role that MSMEs play in our economy," Sec. de la Peña said. "MSMEs comprise over 97 percent of the firms in the ASEAN region."

SETUP assistance has a ripple effect too in the labor sector, added Sec. de la Peña. Since its launch, it has helped create additional 167,939 job opportunities contributing to the overall productivity of the MSMEs that reported total gross sales of P 35.354 billion from 2002 to 2016.

DOST blueprint for enterprise development

SETUP is DOST's blueprint for enterprise development particularly for MSMEs in the regions. It supports and helps sustain MSMEs, and addresses their specific technology needs to improve their operation. Scaling up the technology used by businesses leads them to become more productive and competitive.

SETUP supports already operating MSMEs by providing seed fund for technology acquisition, needed equipment, and technical trainings and consultancy services. Further, SETUP also assists in the packaging and label design of products for longer shelf life and better look.

SETUP also provides technical assistance and consultancy services in Hazard Analysis and Critical Control Points, Good Manufacturing Practices, and Quality and Environmental Management System. Also, SETUP provides trainings on specific technical skills such as machining for furniture, handloom weaving, sea weed culture, and tissue culture production, among others.

Companies who avail of SETUP also get included in DOST's database information system for client MSMEs. Moreover, they get support in setting up product standards, including testing and calibration of equipment.

In addition, SETUP provides MSMEs access to breakthroughs and equipment developed by the different facilities of DOST such as the Regional Food Innovation Centers (FICs).

SETUP offers the Manufacturing Productivity Extension Program for businesses in the manufacturing and food industry, Consultancy for Agricultural Productivity Enhancement, and Consultancy for Cleaner Production Technology for businesses that want to improve the safety and efficiency of their production process and minimize waste.

What is unique in SETUP are its features where financial assistance is extended to clients, also called adoptors, at zero interest rate and payable for three years. SETUP provides financial assistance up to P3 million for the purchase of modern equipment, subject to assessment and approval of DOST.

SETUP currently prioritizes MSMEs involved in food processing; furniture; gifts, housewares, and decors; marine and aquatic resources; horticulture and agriculture; metals and engineering; health products and services/pharmaceuticals; and ICT/electronics.

Some success stories

Since it was launched, SETUP already had many success stories that prove the effectiveness of the program in making enterprises more competitive.

For instance, the Raw Brown Sugar Milling Company, Inc., a company based in Igbalanac, Pamplona, Negros Oriental, started small but is now exporting muscovado (raw brown sugar) to Japan and Korea. Ninety percent of the company's muscovado powder, rocks, and cubes are exported,

"From the technology, the choice of lot, the layout of the plant, the training of our personnel and staff and marketing of our products, we owe everything to DOST," said Atty. Alejandro Florian O. Alcantara, president and CEO.

Jamla Corporation, a company operating in Barangka, Mandaluyong City produces tablea (cocoa) for chocolate processing and chocolate powder. By acquiring equipment recommended by DOST through SETUP, it increased its sales and production by 78%. Likewise, by applying good manufacturing practices, Jamla decreased material losses from 5% to 0.25%.

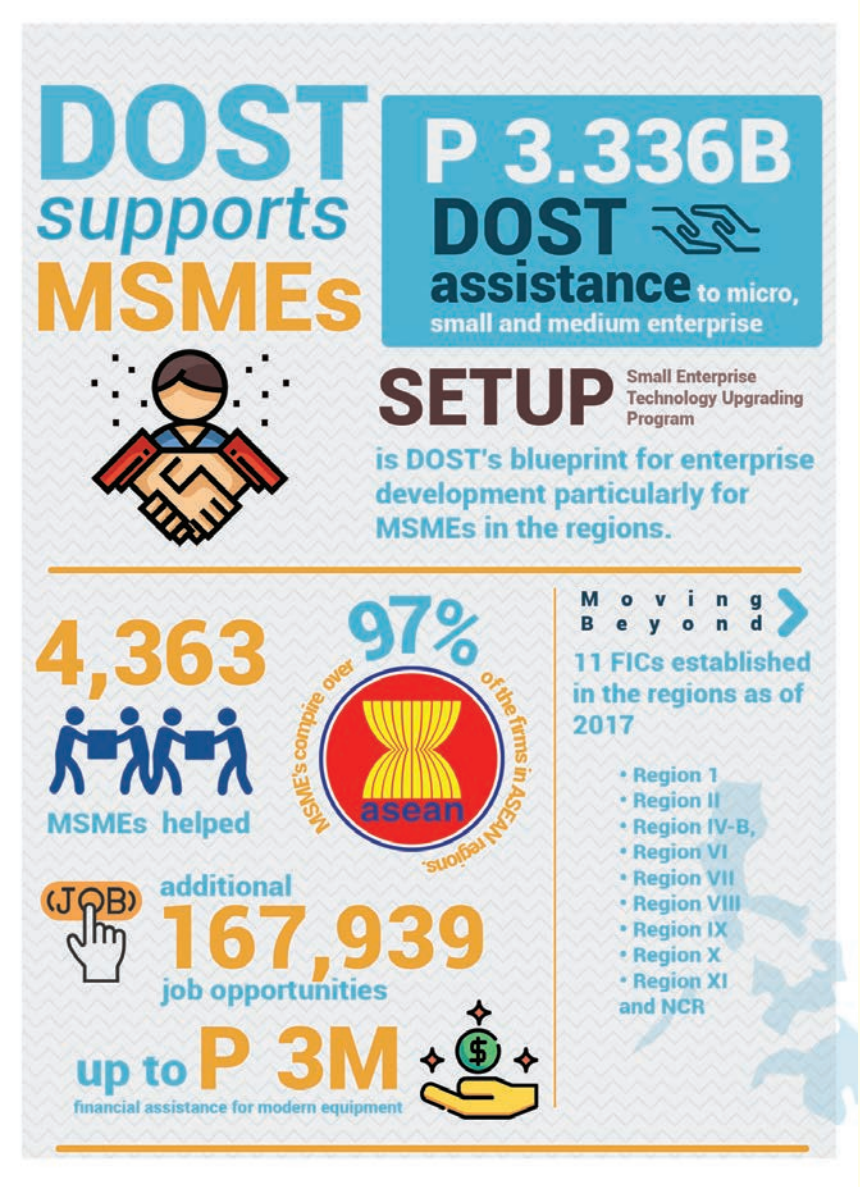
Meanwhile, the Kerobee Farm in Benguet which expanded its product lines from honey to organic vegetables and herbal plants, upgraded its greenhouse, and put up the tea processing packaging facility under SETUP. The upgraded greenhouse increased the farm's efficiency that led to whole year round production of organic vegetables and herbs. Its upgraded equipment also helped the farm churn out more products quicker, such as the automatic tea bag packing machine that hastened the enveloping, tagging and sealing of tea bags from the manual 11 bags/minute to the more efficient 35 bags/minute.

Moving beyond

One of DOST's latest initiatives to help MSMEs are the FICs established in the regions. These centers, serving as research and development hubs for the food processing industry, offer equipment that help food enterprises innovate their products. These equipment are vacuum fryer, vacuum packaging machine, spray dryer, water retort, and freeze dryer. Locally designed and fabricated, the equipment help improve product quality, increase productivity, prolong the shelf-life of food products, and minimize waste at a lower cost.

As of 2016, DOST has already established 10 FICs in regions I, II, IV-B, VI, VII, VIII, IX, X, XI, and NCR. Supporting the FICs are the DOST-Industrial Technology Development Institute and the DOST-Metals Industry Research and Development Center for the design, development, and fabrication of equipment.

SETUP adoptors and their products, as well as the latest technological innovations, were showcased during the 2017 National Science and Technology Week (NSTW) held on July 11-15, 2017 at the World Trade Center.



Recreating. Reinventing. Reaffirming.

MIMAROPA entreps go towards goal

By PATRICIA O. CALORA & MARK KEVIN A. YARA,
DOST-MIMAROPA Regional Office

Now on its second leg, the Mentoring Program in the island province of Marinduque hops on to help more entrepreneurs towards a vibrant and sustainable technopreneurial environment in the region.

Primary mentor consultant conducts a one-on-one consultation with the Balanacan Multi-Sectoral Credit Cooperative in Marinduque.

The Mentoring Program, the first of its kind in the Department of Science and Technology (DOST) system, is initiated by the DOST-MIMAROPA to help micro, small, and medium enterprises (MSMEs) innovate ideas and navigate their way to business success. The main objective of the program is the development of concrete, timely, and effective business plans through the collaborative effort of target MSMEs and a local mentoring team. Specifically, the initiative aims to enhance the skills and capabilities of DOST's Small Enterprise Technology Upgrading Program (SETUP)-assisted firms and community-based enterprises. This is being done through one-on-one consultations with mentor-consultants, firm visits, and trainings on financial, marketing, production, and organizational management.

The program uses multiple approaches such as one-on-one and group/flash mentoring to ensure that the beneficiaries get the most out of the program.

In 2015, DOST-MIMAROPA held the first ever mentoring program in Romblon and it turned out successful. About 38 MSMEs got in the kickstart activity which involved group/flash mentoring. Out of 38 MSMEs coached, 12 firms were guided by a well-respected entrepreneurship guru. The improvement in the participants' business operations, management, and mindset all resulted from the mentoring program as the entrepreneur-participants were able to develop new ideas, establish new and expand business, and, most importantly, increase their sales.

A year after, DOST-MIMAROPA implemented the program in Marinduque, with 15 mentees participating in the initial group session. Afterwards, 10 of them were placed in a six-month one-on-one mentoring sessions with a primary mentor-consultant and five other local mentors. These mentors visited the participants' respective firms to identify possible areas of improvement. In addition, they addressed the participants' concerns and challenges they faced regarding business mindset, operations, and management.

According to the mentor-consultant, unlike the mentoring program in Romblon, the mentoring program in Marinduque posed more challenges in terms of organizational management since community-based enterprises (CBEs) have a more complex organizational structure compared with sole-proprietorship or partnership firms.

The local mentoring team made up of experts in different business aspects also guided the MSMEs. From October to December 2016, these local mentors conducted group/flash mentoring sessions which tackled

Graduation ceremony of the MSME beneficiaries of the mentoring program in Romblon.

product development, marketing strategies, customer service, and business accounting. The overarching goal of these training sessions was to allow the participants to develop their own business plan and present it to Ms. Tiong-Aquino for evaluation before their graduation in December 2016.

The first training session in October 2016 which focused on product development and customer service was handled by professors from Marinduque State College (MSC). In November, a proprietor of one of DOST-MIMAROPA's most successful assisted firms provided inspiration to the participants as she shared firsthand her marketing strategies. The last training session held in December focused on the financial aspects of business.

These training sessions enabled the participants to identify appropriate customer services, devise their own marketing strategies, and learn basic accounting systems – all of which contributed to their business improvement plan.

Since the program started, a significant increase was observed in the sales of the participating firms. The Balanacan Multi-Sectoral Credit Cooperative, for example, increased its sales by 54 percent after the program. Their product, vacuum-fried *dilis*, even showed potential to penetrate international markets. According to the cooperative's president, many clients have expressed their interest to export the product. Other firms, such as the Batayang Pamayanang Kristiyano-Holy Cross Parish Chapter and the Mogpog Vegetable Growers Association, have improved the marketability of their products – candles and coconut candy, respectively – by coming up with new designs and packaging and labeling.

As a testament to the program's success, MSC established a mentoring extension program starting July 2017. The mentor-consultant assessed first the progress of the participating entrepreneurs before they were turned over to local mentors for mentoring. The mentoring extension program will not only enhance the expertise of local mentors but also ensure that the mentees continue to apply and improve on what they learned from the Mentoring Program.

Indeed, the Mentoring Program has consistently shown its potential to create a sustainable conducive technopreneurial environment. Through the program, DOST-MIMAROPA was able to form collaborations with MSC, PCCI-Marinduque, and LGU-Marinduque. In addition to these collaborations, those formed among the CBE mentees will all contribute to a robust environment. From its pilot implementation in Romblon to its implementation in Marinduque, the program has shown tremendous results. It has sought to improve the overall operations and competitiveness of MSMEs in MIMAROPA, and has demonstrated the ability to do so.

The continued implementation of the program, this time in Occidental Mindoro, signifies DOST-MIMAROPA's staunch dedication and steadfast commitment to enterprise development in the countryside.

Primary mentor-consultant conducts a group mentoring session for the MSMEs in Marinduque State College.

JUST DESSERT NO LONGER

Nurse develops nata de coco as wound dressing

Text and photos by JOSHUA I. LAO, *DOST-STII*

WHO WOULD think that nata de coco, that white jelly-like chewy delicacy made from coconut, can be used as a wound dressing?

Denver Chicano, whose parents manufacture nata de coco, found an ingenious way of using nata de coco aside from using it as food or ingredient.

"Walang Dikit, Walang Sakit" – that's the tagline of Chicano's wound dressing which he named Cocopatch, an all natural wound dressing made from coco-cellulose fiber. Said dressing promotes moisture and has been proven effective through medical tests as a better alternative to traditional wound dressings.

Moisture in the Cocopatch helps greatly in the healing process of the wound as it allows the skin to repair itself easily by decreasing the wound surface inflammation, says Chicano. "Moisture also keeps the skin intact and prevents skin maceration," he added.

Chicano's office in Marikina

Necessity is the mother of invention

Developing a wound dressing came naturally for Chicano. A nurse for three years at the Philippine General Hospital (PGH), he had seen various cases of burns from mild to worst. It then dawned on him the need to develop a specialized wound dressing.

"I saw the need for a wound dressing that is cheaper and locally made," Chicano recalled. "I've seen patients having a hard time buying expensive ointments and specialized wound dressings which were mostly imported."

Aside from the cost, he also cited the length of the treatment as an important factor. He had seen cases where the patients' infected body part had to be cut off to avoid complications. "This could be prevented if treatment can be done faster," he said.

His patients come from Classes C to D, so he could't help but think of a better way to serve them.

"It was March 27, 2007 when I first started to conceptualize about the product and on April 11 of the same year, I developed a prototype," Chicano recounted. Cocopatch was born.

Since he was a newly admitted nurse in the said hospital, he was hesitant to submit his research proposal on the wound dressing product. But through his efforts and a friend who was a doctor from the same hospital, funding for the research was made possible. This helped in the development of the product.

How DOST helped patch things up

Before seeking help from the Department of Science and Technology (DOST), Chicano did everything manually from research to formulation of the product. He admitted that he had a hard time deciding on the amount of each ingredient for his product. Another problem that he encountered was how to promote Cocopatch.

Through the help of DOST's Small Enterprise Technology Upgrading Program,

Chicano explains the various applications of Cocopatch as well as its advantages over the traditional bandages.

Chicano acquired a financial assistance of P584,000 enabling him to have an autoclave machine and a vacuum sealer. The machines doubled his production of wound dressings.

Prior to acquiring the machines, he could only produce 500 pieces of wound dressing in three different sizes (5x8, 3x3 and 2x2) per month. Now, with the help of the machines, he is able to produce more than a thousand pieces of the product.

On the other hand, DOST also helped Chicano in addressing his problems with regards to the promotion of his product through conventions and exhibits. Tele-wound care, which they designed, allows their interested customers to have a photo of their wound taken and sent to them for assessment which they reply afterward with regards to proper wound care and treatment.

"DOST helped greatly on this aspect through promotions of our product in their exhibits and conventions, further improving our information dissemination," Chicano said.

DOST also supported this invention by assisting Mr. Chicano on having his product patented. The product, trademarked under the name VERMAC, was patented under Patent Registration No. 22007000429.

A fiery setback

July 2008 was not a good time for Chicano. He was currently working on the development of Cocopatch then when fire broke in their office which inflicted 3rd degree burn on his mother. His mother was saved by one of the workers but, unfortunately, said worker who rescued his mom died from the accident. It was a major impediment on his project and it also cost them a lot on hospital and medical bills.

A sharp comeback

June 25, 2010 was a major turning point in Chicano's life. It was early morning that day while he was on his way to work at PGH when he was robbed by two armed men. He gave his phone and wallet. Unfortunately, the assailant was unsatisfied with his phone model and as what Mr. Chicano stated, the assailant was under the influence of drugs. The man stabbed him twice and slashed him several times. He was still at Lawton, Taft Avenue that time while struggling to find a jeepney since blood was all over his uniform thus, forcing him to walk all the way to PGH.

Luckily, no major organs were damaged by the unfortunate incident. Since then, he thought that this was a second chance given to him, a chance to help others improve their lives.

Twice a year, he and his wife Dr. Acel Chicano, a surgeon, visit certain areas in Mindanao to conduct free surgical missions and offer their wound dressing product for free while educating the people on proper wound care treatment.

Future plans and partnerships

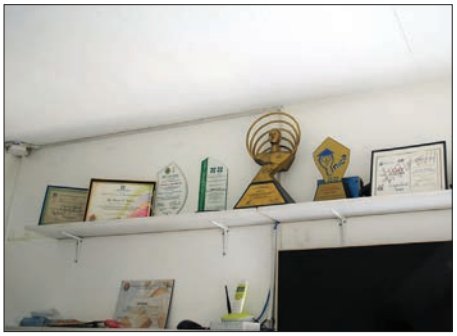
Passionate in helping people and being an innovative person, Chicano didn't stop doing research on other products that can be developed using coco-cellulose.

Currently, he is doing research on making spray product and ointments with coco-cellulose as base ingredient. He plans to seek more help from DOST in this regard as he knows that DOST houses a complete facility where he can test his products and further improve his research. Chicano also plans to seek further financial assistance from DOST once his research is complete.

He aims for three things, he said, which are: 1) to uplift the coconut industry in the Philippines, 2) to uplift the nata de coco industry in the country, and 3) to improve wound care management in terms of cost and efficacy.

When asked about advice and recommendations for those who have an idea or want to pursue something like what he did, he said, "Just take the risk, life is just like a dream, like a smoke that passes by, we should make it remarkable by providing care to service."

Cocopatch, being a one of a kind ingenious product, is not only efficient as shown by clinical results but also through the awards and recognitions it garnered including: UP-PGH Recognition: Tatak PGH Nurse Innovator Award; Most Promising Intellectual Property Award by the Philippine Chamber of Commerce and Industry; First Place, Philippine Association of Plastic Reconstructive and Aesthetic Surgeons Research Competition; First Place, Philippine College of Surgeons 1st Inventions Competition; Creative Design Category Regional Winner LIKHA (Outstanding Creative Research) Category (DOST-NCR) National Invention Contest; and Philippine Green Innovation Product 2014.



A display of Cocopatch's award and recognitions from DOST and other institutions.

DOST brings first ever science journalism workshop in Caraga

By ALLAN MAURO V. MARFAL, *DOST-STII*

(From left)Dr. Aristotle P. Carandang and Framelia V. Anonas of Department of Science and Technology-Science and Technology Information Institute, Timothy James M. Dimacali, editor of SciTech section of GMA News Online, and Ruby Shaira F. Panela, a regular contributor to Asian Scientist, answer questions of participants during the open forum. (Photos by Henry A. De Leon, DOST-STII)

VARIOUS STATE universities and colleges (SUCs) in Caraga region are actively involved in different research and development (R&D) projects, particularly in the field of disaster preparedness management, environment, and enterprise technology. Thus it is the perfect time to train future storytellers who will share the benefits of the innovative products and technologies developed by our local scientists, researchers, and engineers.

Department of Science and Technology-Science and Technology Information Institute (DOST-STII) and DOST-Caraga then joined hands for this purpose to conduct the first ever science journalism writeshop in the region. The writeshop was held on June 29 to 30, 2017 at Almont Inland Resort in Butuan City, Agusan del Norte.

With the theme #ScienceJournoAko: Communicating Science in Caraga Region, this two-day activity was designed to promote the importance of science journalism in national development and to enhance the skills of the participants in crafting effective and accurate science related stories, and encourage them to consider science journalism as a career.

"Conducting this kind of training (science journalism workshop) is very timely for our region. Enhancing the skills of our campus journalists to write and tell stories on different scientific researches and innovative products could provide significant boosts to our efforts

Participants finish their respective articles before the deadline set for the workshop session.

A participant interviews Engr. Jojene R. Santillan of Caraga State University on some updates on the Phil-LiDAR technology.

in promoting the importance of science, technology, and innovation in this area," said Ricardo N. Varela, assistant regional director of DOST-Caraga.

Relevance of communicating science to the people

Dr. Aristotle P. Carandang, chief of Communication Resources and Production Division of DOST-STII and one of the resource speakers, shared with the participants how crucial it is for science journalists to point out who would benefit from technologies and science-related programs and initiatives .

"Scientists are driven to pursue their field for the greater good and for the betterment of life and this effort should be communicated well to their intended audience. We, as science journalists, serve as a bridge between the scientists who developed all these innovative products to the people who would gain from these noble works," Dr. Carandang said.

Meanwhile, Timothy James M. Dimacali, editor of SciTech section of GMA News Online, shared that one exciting thing about being a science journalist is that "you are offering public service." He elaborated that by covering and writing stories on possible weather disturbances as well as earthquake advisories, the science journalist provides essential information to the public and local government units (LGUs) about the possible impact of these calamities.

"In the age of social media wherein all types of information are very accessible and dissemination of these is very rapid, stories related to weather updates and other calamities become more important than ever," Dimacali said.

Shaira R. Panela, a regular contributor to Asian Scientist, said that for science stories to have an impact, these should contain analogies and comparisons so that the readers could easily understand the point of the story.

"The easiest way to make your stories alive and relevant is to find a human face of the stories. You can use a farmer if you are talking about agriculture. You can use the story of a miner who has experienced the negative effects of abandoned mining sites, or you can tell the story of someone who went through devastation during a typhoon. It is easier to understand the story if you could put yourself in the shoes of another person," said Panela.

Henry A. de Leon facilitates the workshop session on basic photo journalism at Jucha Juice Bar in Butuan City.

Henry A. de Leon, a photo journalist from DOST-STII gives his insights on basic photography and photojournalism.

Art of the Interview

Meanwhile, Framelia V. Anonas, editor-in-chief of S &T Post and senior science research specialist from DOST-STII, gave some insights on what kind of approach that a science journalist should do in conducting interviews with subject matter experts.

According to her, being prepared before the interview is the number one thing on the list.

"Do as much research as possible about your topic. Study terminologies that your source uses. Well-prepared reporters encourage sources to be comfortable with them in sharing necessary data. This will result in fruitful conversation that would make your stories much better," said Anonas.

Anonas also advised the participants that during the interview process, always ask open-ended questions and not those answerable by "yes" or "no". She explained that throwing questions that start with how or what would increase one's chances in getting relevant information about the topic and best quotes from sources.

Photojournalism and infographics design

Aside from the lectures and actual writing exercise on science related topics, the participants also learned various techniques in photojournalism and infographics.

Henry A. De Leon, a veteran photo journalist from DOST-STII, shared basic knowledge on photography that gives impact to the public. He also gave some tips in coming up with clear and effective captions.

Meanwhile, a special video tutorial toured the participants on basic graphic design and creating catchy and effective infographics. Kimverlyn C. Sayson, DOST-STII's resident graphic designer, provided valuable suggestions on designing catchy and understandable infographics, especially in dealing with science related concepts and topics.

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