OUTCOME 7

#S&TCareers
Building S&T Human Resource Towards a Science Nation

Department of Science and Technology

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OUTCOME 7 – **#S&TCAREERS** | BUILDING S&T HUMAN RESOURCE TOWARDS A SCIENCE NATION AND INNOVATION

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FOREWORD

Science Nation. The phrase is not an apt description for our country of 7,107 islands. Not yet.

The key to make the Philippines a real "Science Nation" is information. With information, programs and technologies developed or funded by the Department of Science and Technology (DOST) – as well as other locally crafted technologies which help solve the country's multi-sectoral problems - become known among Filipinos in all corners of the archipelago, thus pushing them to avail or to take advantage of these science-based innovations to uplift their lives.

When such information is cascaded to the Filipino everyman – every Juan and Maria, including those in the so-called "laylayan ng lipunan" - a lot of things are on cue to take place:

Farmers will become more productive and earn more, small enterprises will grow, thrive and be more competitive, industries will be revitalized, technopreneurship will be more prevalent and employment will increase via the Business Process Management (BPM) sector, government services will become more responsive, healthcare services will improve and become more accessible to more Filipinos, opportunities for S&T education especially among the underprivileged will become more available, and the citizenry will be armed with more effective strategies for disaster preparedness and strategies.

What I had just mentioned are the DOST 8 Outcomes – eight specific targets that the Department aims to achieve in the long run via the following sectors: Agriculture (Outcome 1), Enterprise (Outcome 2), Industry (Outcome 3), IT-BPM (Outcome 4), E-governance (Outcome 5), Health (Outcome 6), Education (Outcome 7), and Disaster Preparedness (Outcome 8).

This compendium of seven publications is a tool for delivering such vital information. It presents to you how DOST and its 8 Outcomes address the current problems in each of these sectors, and thus help contribute to the Philippines' economic resurgence. Six of these seven publications tackle one DOST Outcome each, while the seventh publication focuses on both Outcomes 4 and 5.

In short, this collection is a veritable showcase of the Department's various initiatives across these eight sectors, with stories of ordinary Filipinos whose lives have been touched by the possibilities that S&T has to offer. These stories – encapsulated in news and feature articles – were written by information officers from the different DOST agencies. The articles capture in a nutshell the pivotal role of S&T in a nation's journey to progress and prosperity and why, therefore, S&T should not be taken lightly by any nation, much less a developing country such as the Philippines. S&T, on the contrary, should be at the forefront of government efforts to drive the country forward

and sustain this horizontal trajectory. S&T therefore, should not take the backseat.

This particular publication – titled **#S&TCareers Building S&T Human Resource Towards a Science Nation** focuses on DOST Outcome 7 which is Education. For this Outcome, DOST is aiming for a highly skilled and globally competitive S&T human resources in support of the national S&T programs. Two objectives of these programs are to make the Philippine Science High School as the leading science high school in the ASEAN region, and to enable every town in the Philippines to have at least one DOST scholar. The Department's scholarship programs are well known all around the country and is part of its thrust to produce highly trained and globally competitive S&T workers who have the capability to help move the nation forward with their innovations. DOST offers yearly scholarships – from high school to doctoral degrees – enabling the country's youth, especially from the marginalized sectors, to take advantage of these opportunities and fire up their hopes for a good education and a brighter future. And in getting this education, they also get the chance to be part of the Philippines' next wave of S&T workers who will continue to carry the torch for Philippine progress.

Indeed, information is one of the starting blocks for the country's successful run toward being the definitive Science Nation that it should be. For it is only through complete, accurate, comprehensible, and timely information that mass or public awareness is generated. If the public is aware of scientific and technological developments, they now know how to improve their lives, and thus take action to make this a reality. If there is action, S&T then gets the chance to show off its full capability: rolling its veil of magic across the sectors, over the entire nation, to wrap the entire Philippine population with the bountiful fruits of harnessing its S&T resources. All these, for the welfare and the future of the Filipino.

I humbly invite you to read the stories in this publication and in all of the other six publications as well. In reading these, not only will you get a sense of S&T's importance to a nation, you will also learn how S&T can actually touch your life and that of your family, how it can help you fulfill your dreams, keep you safe and healthy, and allow you to touch other people's lives as well.

Reading these stories will make you realize that S&T has always been a part of our lives and will always be. All we have to do is acknowledge it, use it, and maximize it.

When we do, we're well on our way to becoming a real "Science Nation."

DR. ARISTOTLE P. CARANDANG
Chief, Communication Resources and Production Division
Department of Science and Technology-Science and Technology Information Institute (DOST-STII)

MESSAGE

A solid education on science and technology is an important factor in nation building and the level of literacy of the country's population reflects the determinant course of its economic prosperity.

We Filipinos put a high premium on education and so does the Department of Science and Technology (DOST) which puts the same value on learning, particularly in the field of science, technology, and innovation.

In this book, we will highlight the stories of different programs on education particularly our scholarship program anchored on the Philippine Science High School system. By focusing our resources to improving the quality of S&T education, the DOST has since produced thousands of scholars, engineers, and scientists who are now in the mainstream of society contributing much to achieving inclusive growth. To date, there are 15 Pisay campuses all over the country. The end goal is to put up one campus in every region.

Included here is a story on upgrading our talent pool of scientists who are now active players in different sectors; from private enterprises to industries and institutions of higher learning as consultants, academics, or corporate executives.

One inspiring story tells of the struggle and triumph of a poor farmer's son in Cebu who became a highly skilled engineer because of a DOST scholarship.

With this publication, we hope to show more heartwarming stories of how DOST plays the role of an active advocate in trailblazing the road to quality S&T education for our young and talented students so that they, too, will have the equal opportunity to make a difference.

RAYMUND E. LIBORO
Assistant Secretary

MESSAGE

The Department of Science and Technology's (DOST) information arm – the Science and Technology Information Institute (STII) – is proud to present "#S&TCareers Building S&T Human Resource Towards a Science Nation" for Education, a collection of inspiring, relevant, and interesting stories of Filipino students and educators around the archipelago whose lives have been changed by educational opportunities and education-based technologies.

Side by side with these stories are informative articles about DOST scholarship programs, the scholars, and the various projects of DOST which aim to encourage young Filipinos to take up S&T-related courses.

"#S&TCareers Building S&T Human Resource Towards a Science Nation" for Education is part of a compendium chronicling the DOST 8 Outcomes – or eight thrusts for the Philippines as it fulfills its mandate to "provide central direction, leadership and coordination of scientific and technological efforts and ensure that the results therefrom are geared and utilized in areas of maximum economic and social benefits for the people."

This particular publication is all about Outcome 7 which is geared toward education. Through a high standard of S&T education, DOST aims to continuously produce a reservoir of highly trained professionals in order to replenish the Philippines' pool of scientists, engineers, and technopreneurs who will carry on the mantle of leading the country to the next level of economic progress.

Some of DOST's efforts are detailed here, giving the readers a bird's eye view of how DOST is navigating its roadmap for Philippine S&T education.

Yet, Scholarship is just one of its 8 Outcomes. The others are: **Agriculture** (Outcome 1), **Enterprise** (Outcome 2), **Indusrty** (Outcome 3) **IT-BPM** (Outcome 4), **E-governance** (Outcome 5), **Health** (Outcome 6), and **Disaster Preparedness** (Outcome 8).

Together, DOST's projects across these 8 Outcomes will help keep the country on course, and keep its desired results on target.

For this end, STII will keep on churning timely, accurate, and easy-to-understand information to help make the DOST mission complete. After all, it is through information via publications such as this that scientific and technological advancements – key ingredients for national development – are made known to policy makers, leaders, and the general public who are ultimately the beneficiaries of well-utilized S&T resources.

May the reader find this publication useful – for his daily life, his education, his work and livelihood, his family, for the present, and most of all, for his

RICHARD P. BURGOS
Director, STII

DOST scholarship program in sync with ASEAN integration

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

The Department of Science and Technology (DOST) has redefined and beefed up its scholarship program in science and technology courses to address the need of the country to be at par with other APEC economies for the ASEAN integration this year.

APEC, or the Asia-Pacific Economic Cooperation, is composed of 21 countries that include among others the Philippines, United States, Canada, Australia, Russia, Malaysia, Indonesia, Thailand, Singapore, Chinese Taipei and Vietnam. These countries explore economic cooperation and multi-lateral programs to promote socio-economic development among themselves and the entire region as well.

One of the priority concerns of the APEC is education, especially the sharing of science and technology information among the member countries.

At the forefront of this endeavor is the DOST's Science Education Institute (SEI) that oversees the department's programs on scholarship and assistance to students in the field of science and technology. Under the SEI program is the Philippine Science High School System, the country's premier secondary school in science, mathematics and engineer education.

During the DOST Scholars' Summit held in conjunction with the Science Nation Tour campaign of the DOST in Vigan City recently, hundreds of scholars from the Philippine

Science High School in San Ildefonso, Ilocos Sur and of other schools were feted and given a salute by DOST officials led by DOST Undersecretary for Science and Technology Services Dr. Rowena Cristina L. Guevara, Assistant Secretary and Program Manager for Countryside Development Dr. Urduja A. Tejada and DOST Region I Director Dr. Armando Q. Ganal.

"We are at the forefront of enriching our human resource capital by providing quality education to the poorest of the poor in the countryside," said Undersecretary Guevara. "This is by giving them access to the Philippine Science High School System and other scholarship programs, including those pursuing masteral and doctorate degrees."

Under the DOST programs, there are three main scholarship vehicles, namely: 1) the RA 7687 known as the Science and Technology Scholarship Program, which provides full scholarship to poor and deserving students; 2) Merit Scholarship Program, which provides scholarship for the best-of-the-best students in science and technology ; and 3) the Junior Level Science Scholarship Program under RA 10612 which provides full scholarship to third year students enrolled in the said fields and are willing to teach in science, technology, engineering, agriculture and mathematics subjects after graduation in private or public high schools.

In her presentation to the DOST scholars,Usec. Guevara also said that the number of DOST scholars has dramatically increased over the last five years starting in 2010 under the Aquino administration. Likewise, the total investments for the scholarship programs have increased to allow more scholars to avail of more financial aid and opportunities. In fact, there are now 14 Pisay campuses all over the country, including Batangas and Zamboanga as the latest campuses that opened this schoolyear.

The Philippine Science High School System adopts the One Campus per Administrative Region strategy in line with RA 9036-- targeting 16 DOST - Philippine Science High School (DOST-PSHS) campuses to be established in the country.

Further, with the assistance of a lot of donors from both private and public entities, the sites for two PSHS Campuses, namely PSHS - Western Mindanao and PSHS-MIMAROPA, have already been identified and are programmed to start with their classes this coming SY 2016-2017.

In 2014, a total of 12,117 scholars were supported by these programs composed of 3,973 new scholars, 6,888 continuing scholars and 1,256 scholar-graduates. New scholarship slots have been expanded from 1,250 in 2010 to 5,595 in 2015.

As of SY 2014-2015, the total PSHS System students enrolled have risen to 4,587 from 3,532 in SY 2010-2011.

All these efforts being done by the DOST is in congruence with its thrust to put the Philippines in the world map of educational excellence and attuned to the vision of the APEC to uplift the standards of education in science and technology.

DOST scholar Ernest Nathan L. Nogales, summa cum laude graduate from UP Diliman with a degree in BS Chemical Engineering (middle) and his parents with (from left) DOST Usec. Dr. Rowena Cristina L. Guevara, DOST Sec. Mario G. Montejo, and DOST-SEI Dir. Dr. Josette T. Biyo (far right).

DOST Secretary Mario G. Montejo

DOST undergrad scholarship slots more than triple in 2015 – Montejo

By ESPIE ANGELICA A. DE LEON, *DOST-STII*

The number of slots for undergraduate scholarship offered by the Department of Science and Technology (DOST) under its Science Education Institute (SEI), has more than tripled in five years, jumping from 1,250 in 2010 to 5,595 in 2015.

"We're also now preparing the groundwork for recruiting new partner universities and introducing innovations into the program for us to expand by 100 percent in 2017, on our way to meet the required critical number of scientists," stated DOST Secretary Mario G. Montejo in his keynote speech at "In Touch with Excellence," one of the events during the recent National Science and Technology Week.

In addition, DOST is now producing an average of 350 Master's and 35 PhD graduates in priority science and engineering courses annually.

"Since 2010, we have been strengthening and enhancing our S&T ecosystem, an ecosystem that empowers our scientists and engineers to come up with innovative ideas to improve productivity, enhance delivery of government services, and address the most pressing concerns of Aling Maria and Mang Juan," said Montejo during the event which feted DOST scholars who achieved academic excellence in school year 2014-2015.

According to the Science Secretary, the most critical component of this ecosystem is its human resources, and their number is critical for the Philippines to become a Science Nation able to sustain its development.

"You are blessed with intelligence," Montejo said, addressing the scholars in the audience. "It's only proper to use this God-given intelligence to explore and understand nature. Whatever God created in nature is for our benefit. Let us use this for our country's own good."

Meanwhile, Ernest Nathan L. Nogales, a scholar who graduated summa cum laude from UP Diliman with a degree in BS Chemical Engineering and one of the honorees, rallied his co-DOST scholars to "think about serving the people, not out of duty but out of love. I assure you there is lasting happiness there."

In his speech, Nogales reminded them that some areas in the country remain marginalized – with no electricity, among others.

On the other hand, DOST Undersecretary for Scientific and Technological Services Dr. Rowena Cristina L. Guevara called on the scholars to venture in entrepreneurship while completing their dissertation or thesis.

Around 239 undergraduate, MS, and PhD scholars under SEI's various scholarship programs were honored this year for their academic achievements in "In Touch with Excellence" held at the Philippine International Convention Center.

For more about the scholarships, log on to www.sei.dost.gov.ph and www.science-scholarships.ph

PhilAAST fetes outstanding Filipino researchers

By **LOTUSLEI P. DIMAGIBA,** *DOST-STII*

For their notable contributions and accomplishments in the field of science and technology, five researchers received awards from the Philippine Association for the Advancement of Science and Technology (PhilAAST) during its 64th annual convention held recently at the De La Salle University, Taft Avenue, Manila.

Dr. Grecebio Jonathan D. Alejandro was conferred the "Gregorio Y. Zara Award for Basic Research" for his pioneering research on Plant Molecular Phylogenetics in the Philippines and the discovery of novel genera and several new endemic species in Rubiaceae (coffee family) such as the Mussaendaustii in honor of UST (University of Santo Tomas). He is a full professor at the UST College of Science and current director of the Office of Graduate Research of the UST Graduate School.

Meanwhile, "Gregorio Y. Zara Award for Applied Research" was given to Dr. Claro N. Mingala who is recognized as an outstanding veterinary research specializing on infectious diseases of water buffaloes (carabaos). He is a scientist at the Philippine Carabao Center National Headquarters and Gene Pool in Science City of Muñoz, Nueva Ecija.

Named after one of the country's national scientists who made major advances in aeronautics, engineering and inventions, the Gregorio Y. Zara awards for Basic Science Research and for Applied Science Research were established by the Zara Family and PhilAAS in 1968.

Other awardees are as follows:

Dr. Ramon B.Gustilo, awardee of the "Dr. Paulo C. Campos Award for Health", is one of the world's leading experts in orthopedic surgery. He has developed an internationally recognized classification of open fractures known as "Gustilo Classification of Open Fractures" which is now being used by orthopedic surgeons worldwide in the management of open fractures. He also established one of the world's pioneering and leading musculoskeletal and sepsis research unit that remains pre-eminent in the world of basic research and many other feats.

Dr. Nelly S. Aggangan, awardee of the "Leads Agri Award for Agricultural Sciences," was cited for her exemplary work as a researcher and scientist in the area of agriculture and forestry. She was also instrumental in the improvement of "Mykovam," a soil-based biological fertilizer, as a commercial product efficient in replacing expensive chemical fertilizers for the survival and growth of both agricultural and forest crops.

Meanhile, Dr. Joel Joseph S. Marciano Jr. received the "David M. Consunji Award" for his outstanding contributions as an engineering researcher. He is a professor of Electrical and Electronics Engineering at the Electrical and Electronics Institute of the University of the Philippines Diliman. A recipient of many awards, he is currently the interim director of the Institute for Information Infrastructure Development of the Philippine – California Advance Research Institutes (PCARI), a program of the Commission on Higher Education.

Each awardee received a gift cash of P50,000.00 from PhilAAST (formerly PhilAAS)—an association of scientists and technologists in the country established in 1951 which aims to promote the value of science in the community.

Philippine Science Heritage Center goes interactive

By **MA. LUISA S. LUMIOAN,** *DOST-STII*

The Philippine Science Heritage Center now features five new interactive and digital exhibits to provide visitors a fun and exciting platform to learn about the rich science and technology culture of the country.

A repository of the outstanding accomplishments of the Filipino scientific community, the Center is located at the Science Heritage Building inside the Department of Science and Technology Complex in Bicutan, Taguig City. The latest additions to PSHC are the following:

National Scientists Browser

Get inspired with the life and works of our national scientists through this interactive exhibit. The browser allows the visitors to view the profile, contributions, education, and awards of the 41 National Scientists in the country via touch screen computer.

Be a Biologist

This interactive exhibit features two kiosks, each with digital microscope and a monitor. Users can observe the provided specimens under the microscope through the enlarged image projected in the screen/ monitor.

Pinoy Biotech

The Pinoy Biotech exhibit features the recent developments in Philippine biotechnology. Visitors can learn about the biotech product or process by touching the related image to display the information on the large screen.

Play DNA

This piano-inspired exhibit is an engaging way to teach visitors the concept of DNA—the molecules that contain the code used in the development, functioning and reproduction of living organisms. Each note represents a nucleotide—the building blocks of DNA. Play the suggested music or make your own by stepping on the giant piano to "create" different DNA sequences which will be shown on the screen.

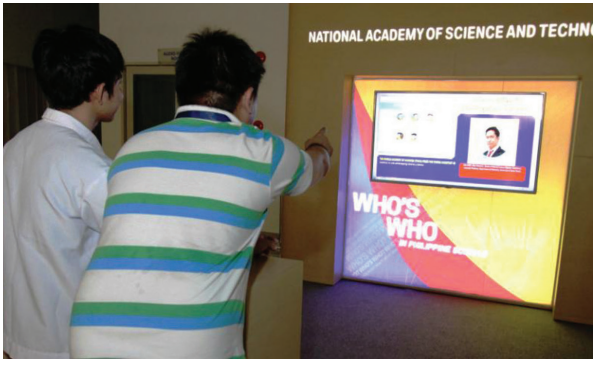
Who's Who in Philippine Science

This exhibit showcases the recipients of National Academy of Science and Technology awards including recently recognized Academicians, Outstanding Young Scientists, and Outstanding Books or Monographs, among others.

Formally launched last July 27, the new interactive exhibits are only a prelude of more things to come. More exhibits will be installed as the PSHC gears toward becoming a world-class science center in the country.

Established in 1998, the Center also conducts various activities such as science career orientation, seminar-workshop for teachers, and science symposia, to bring science closer to the public.

The PSHC is under the management of the NAST Philippines. It is open from Monday to Friday, 9:00 am to 4:00 pm. For reservations, contact the NAST Secretariat at tel. nos. (02) 838-7766 or (02)837-2071 loc 2171.



COA lauds DOST's STARBOOKS

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

The Commission on Audit (COA) has lauded the Department of Science and Technology's STARBOOKS or Science and Technology Academic and Research-Based Openly Operated Kiosks, the first digital science library in the Philippines which can run without internet connection.

In its final report of 2014, the COA indicated that STARBOOKS is one innovation that merits praise because it provides opportunities to deprived but deserving students in the countryside and gives them access to information on S&T for free.

"Looking at this program, bringing this library to far-flung areas is very noble as far as COA is concerned," stated Karlo Almonidovar, Commission on Audit supervising auditor assigned at the DOST. "The social impact of STARBOOKS is very important because this addresses one of the strategic objectives of the government which is poverty alleviation through education, and we approve of it, that's why COA is called 'partner in development.'"

STARBOOKS is a technological innovation of the traditional library, transforming it to digital format where it contains knowledge products and research materials such as scientific journals, audio-video productions and film clips, tutorials and detailed information on Filipino scientists and inventors and their works. It covers varied topics such as food and nutrition, health and medicine, energy, environment, livelihood technologies, and others. In 2013, its content was further beefed up by the addition of the Britannica Ultimate Encyclopedia 2013 Edition.

It is a virtual "library in a box" – bridging the technological divide to benefit students with limited access to the internet.

"The STARBOOKS program was conceptualized primarily to provide easy access to S&T information by our students especially in the countryside where we have limited Internet access," said DOST Secretary Mario G. Montejo. "Since this module requires no internet connection, DOST is able to level the playing field in terms of providing updated knowledge products that otherwise could have been available only to those with financial means."

Recently, the American Library Association, an international organization of library associations in the United States, took notice of STARBOOKS and conferred the program with the ALA Presidential Citation for Innovative International Library Projects last June 29, 2015 at the International Librarians Reception at the San Francisco Library in San Francisco, California.

"This is the essence of bringing education to far-flung areas. The program is worth pursuing because of its accomplishment as the program has already been distributed nationwide and has gained significant milestones," added the COA official.

As of this writing, DOST's Science and Technology Information Institute, the lead implementing agency for STARBOOKS, has already installed 654 units/kiosks in 69 provinces all over the country (Per COA Annual Audit Report as of December 2014, there were 12 STARBOOKS kiosks established in CAR, Masbate, Negros Oriental and MIMAROPA and 351 for schools, LGUs, provincial S&T centers and public libraries).

US Peace Corps volunteers hail STARBOOKS as S&T learning tool

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

A group of US Peace Corps volunteers who recently got a first-hand experience of the STARBOOKS praised the DOST's first and only "library in a box" in the country as a very good "S&T learning tool."

In a visit to the Science and Technology Information Institute (STII) of the Department of Science and Technology (DOST), Ji Yusi of the US Peace Corps volunteers said, "It was awesome! Very easy to use and when you log in, it's very easy to search with lots of videos and news, there's a lot of information that people can use."

A volunteer from Chengdu, China, Yusi said that she has never seen anything like the STARBOOKS, not in her hometown or in her country. "That is why we are here, we are learning from your experience," added Ji.

STARBOOKS, acronym for Science and Technology Academic Research-Based Openly Operated Kiosks, is an innovative product of STII aimed at bringing closer to communities with no or limited internet access a myriad of science and technology information gathered through the years by STII.

With the excitement already running high for the 11 visitors from the US Peace Corps, Louise Ian de los Reyes of the Information Resources and Analysis Division (IRAD) of STII gave the group a short backgrounder and updates on STARBOOKS. De los Reyes started off with the short history of STII,

on how STARBOOKS came about and the extent of its implementation with regard to deployment of STARBOOKS unit to different schools all over the country. According to de los Reyes, there are already 745 kiosks installed in different regions from Tuguegarao in the north to Davao in the south.

IRAD Chief Rosie Almocera, likewise, gave a brief welcome message to the volunteers and encouraged them to create something similar to STARBOOKS that they can apply in their home countries.

"STARBOOKS is a unique innovation that provides our students even in far flung areas access to science and technology information that they can use for research projects and to upgrade their personal knowledge on various subjects like Biology, Chemistry, Physics, Mathematics, and other disciplines," Almocera said. She further challenged the group to come up with their own versions of the STARBOOKS so that the vast wealth of information on science and technology can be shared to as many people as possible.

After the briefing, the volunteers navigated the STARBOOKS on their own so they can actually experience how it works.

"You can see how advance you are with STARBOOKS and how cutting-edge this is because in the U.S. internet is more prevalent. We don't see something like this and this is good because books are expensive," said Elizabeth Karr, Peace Corps Librarian.

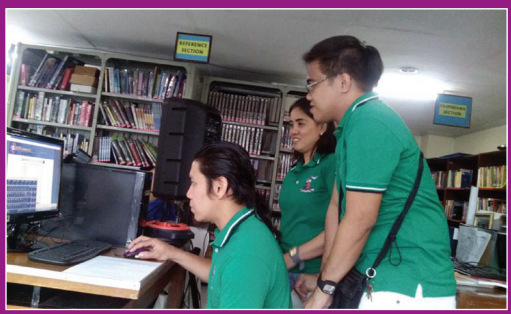
Karr added that the database resources are very expensive and she commends the institute for bringing the information to the communities who otherwise have no access to useful S&T information.

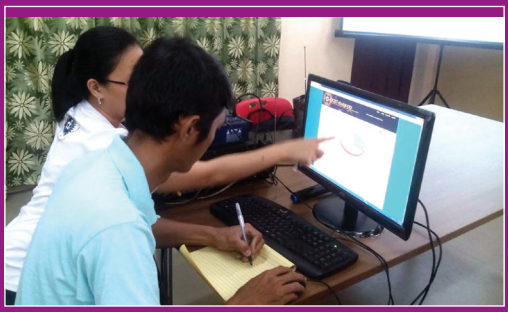
The immersion activity by the US Peace Corps was organized by the US Peace Corps national organization through the United States Embassy in Manila. The group was led by Sheila S. Chan, Resource Coordinator of US Peace Corps Philippines.

"STARBOOKS is user-friendly and so easy to navigate; ideal for students and this encourages exchange of knowledge which you cannot find in just one place. You have to share it and that is, I think, what STARBOOKS is all about. You are not restricted by copyrights and knowledge is free-flowing, and a lot of people will benefit from this."

At present, the US Peace Corps supports the development of the Philippines in three sectors, namely: environment, education and coastal resource management. Since 1961, some 8,000 volunteers from different countries have already served in the Philippines in various capacities.

The National Library in Manila serves as repository of Filipiniana and rare books.





DOST's STARBOOKS to expand reach via partnership with National Library

By **ESPIE ANGELICA A. DE LEON**, *DOST-STII*

The Philippines' first digital science library – the internationally recognized STARBOOKS or Science and Technology Academic and Research-Based Openly Operated Kiosks – is set to connect with more Filipinos as the Department of Science and Technology (DOST), through its Science and Technology Information Institute (STII), formalizes its partnership with the National Library of the Philippines (NLP) on July 25, 2015 as part of DOST's National Science and Technology Week (NSTW).

Under the partnership, pilot municipal libraries in Quezon City, Manila, Pasig, Marikina, Malabon, Navotas, Las Piñas, Makati, Taguig, Tondo, Mandaluyong, and Pateros will be able to beef up their library resources with the addition of STARBOOKS with NLP content into their collection.

Developed by STII, STARBOOKS is a user-friendly digital library which may be accessed without internet connection. It contains local and foreign science and technology resources in text, video, and audio formats. Included in its contents are Britannica Ultimate Encyclopedia, journals, investigatory materials, and livelihood videos, covering topics such as food and nutrition, health and medicine, energy, environment, livelihood technologies, and others.

"STARBOOKS is our humble contribution to the world of education and science," DOST Secretary Mario G. Montejo said during STARBOOKS' launching in April 2011. "The fact that time and distance have been neutralized as limiting factors for undertaking research is a big benefit especially for our young, intellectually curious minds," he noted.

Recently, STARBOOKS earned the nod of the international community when it was awarded with the American Library Association Presidential Citation for Innovative International Library Projects last June 29, 2015 at the International Librarians Reception, San Francisco Library in San Francisco, California.

The signing of the Memorandum of Understanding between DOST and NLP will take place during the STARBOOKS Stakeholder's Convention at Forum Hall 2 of SMX Convention Center in Pasay City during the five-day run of NSTW from July 24-28, 2015.

Aside from students and science buffs, STARBOOKS is also a useful tool for scientists, researchers, technopreneurs, and other S&T professionals. Several schools and LGUs across the Philippines' 17 regions are now designated STARBOOKS sites.

The STARBOOKS Stakeholder's Convention is just one of several activities lined up for NSTW. Organized by DOST, NSTW is an annual showcase of Filipino inventions and innovations featured in interactive exhibits, product displays, fora, launchings, and others. For more information, log on to www.nstw.dost.gov.ph and www.science.ph.

Students check out STARBOOKS during DOST's just concluded National Science and Technology Week at SMX Convention Center in Pasay City. (S&T Media Service)

Librarians become more engaged with STARBOOKS – DOST official

By ESPIE ANGELICA A. DE LEON, *DOST-STII*

According to Department of Science and Technology (DOST) Asst. Secretary Raymund E. Liboro, librarians will no longer be the typical detached person inside the library with STARBOOKS around.

Instead, more students and library users will approach and rely on them for information they need from a technology such as STARBOOKS, or Science and Technology Academic and Research-Based Openly Operated Kiosks, the first science digital library in the Philippines.

Liboro made this statement during the STARBOOKS Convention, one of the activities in the recent 2015 National Science and Technology Week at SMX Convention Center in Pasay City.

Developed by DOST's Science and Technology Information Institute (STII), the internationally recognized STARBOOKS is user-friendly and may be accessed without internet connection. It contains local and foreign S&T resources in text, video, and audio formats including journals, investigatory materials, and livelihood videos. The materials cover a diverse range of topics, from food and nutrition, health and medicine, energy, to environment, livelihood technologies, and many others.

"Librarians hold the key to this information in STARBOOKS, which continues to increase," said Liboro at the Convention, encouraging the librarians to learn how to navigate through its contents and be familiar with the information contained in it. Knowing its contents, Liboro said, will allow them to readily recommend to students and teachers the appropriate materials and sources they need and which they can easily access in STARBOOKS.

In 2013, STARBOOKS gained an ace up its sleeve by acquiring Britannica Ultimate Encyclopedia.

The project marked another milestone last July when it inked a partnership with the National Library of the Philippines (NLP). The signing of the Memorandum of Understanding between DOST and NLP, represented by Assistant Director Yolanda E. Jacinto, was the highlight of the STARBOOKS Convention which was attended by officials and staff of STII and NLP, librarians, and library operators.

Under the partnership, select pilot municipal libraries will boost their resources with the addition of STARBOOKS with NLP content into their collection, thus making these extensive materials more accessible to more Filipinos, including students.

"That is why we developed STARBOOKS, to make S&T information more accessible to students," said DOST Secretary Mario G. Montejo. "We want to encourage our students to take up courses in S&T, because we believe that to achieve inclusive growth we need to strengthen and beef up the pool of scientists, engineers, programmers that we have today."

The pilot municipal libraries are located in Quezon City, Manila, Pasig, Marikina, Malabon, Navotas, Las Piñas, Makati, Taguig, Tondo, Mandaluyong, and Pateros.

"Library system as a platform is evolving. Digital is the way to go," Liboro told the audience.

Recently, STARBOOKS earned the nod of the international community when it was awarded with the American Library Association Presidential Citation for Innovative International Library Projects last June 29, 2015 at the International Librarians Reception at the San Francisco Library in San Francisco, California.

Meanwhile, Liboro announced at the Convention that STARBOOKS will eventually be accessed online as well and that Filipinos can now look forward to SUPER STARBOOKS.

SUPER STARBOOKS, he said, will contain some 20,000 livelihood materials, including 120 full-length livelihood videos on "how to make longanisa, chicharon, and a lot more," said Liboro.

For more information about STARBOOKS, email dost.starbooks@gmail.com or starbooks@stii.dost.gov.ph.

DOST scholarships offer ray of hope for Yolanda-stricken Region VIII

By **RAMIL UY**, *DOST VIII*

The killer strength of super typhoon Yolanda (Haiyan) that hit Region VIII on December 8, 2013 was not enough to extinguish the fiery spirit of "Waraynons," a tag for people from Region VIII - waray-waray being their native tongue or most commonly used dialect.

The whole world wept but the Waraynons' fiery spirit impassioned them to stand and pick up the broken pieces left by the typhoon and start building their lives all over again.

Packing unprecedented power, Yolanda made landfall five times while crossing over the central Philippine islands, decimating entire regions on the wayside. Particularly affected were many of the poorest communities whose already difficult circumstances were even further compromised by the storm.

Mostly devastated by this super typhoon in particular were municipalities in Leyte, leaving Region VIII's capital city, Tacloban, wrecked and unrecognizable.

The storm affected four provinces and 10,436 barangays in 575 municipalities when it hit land with sustained winds of 196mph. It ripped off roofs, shattered windows, and collapsed buildings with its even stronger gusts. And it inundated coastal regions with its ferocious storm surge. It destroyed boats and fishing inputs, swallowed people and their houses, leaving majority of these completely destroyed and uninhabitable.

Based on USAID data, there were 16 million people affected by the typhoon with 6,300 deaths associated with it. There are claims, however, that the death toll reached to more than 10 million, though there is no data to prove such claim. Meanwhile, 4.1 million people were displaced and 1.1 million houses were damaged.

Government programmed a rehabilitation plan that will cover a three-year period, until 2016 to be exact.

DOST Secretary Mario G. Montejo addresses the scholars, posing to them the challenge to be innovative and ready for the 2015 ASEAN Integration.

The most affected sector was education, since almost all educational institutions suffered heavy damage of their classrooms and facilities.

High school classes were gravely affected due to these damages. Hopelessness came across the faces of high school graduating students and their parents. Lurking in their minds were the questions "Makaka-kolehiyo pa ba kami? Hain daw la kami makuha pan gastos kay waray naman kalubihan ngan mauuma?" (Can we still go to college? Where can we get money for our education when there is no more coconut and a farm to till?)

Even the DOST Region VIII office begged off and asked for the postponement of the conduct of the Junior Level Science Scholarship Program, a scholarship designed for incoming junior college students, due to lack of venues to conduct the scholarship exams and the absence of regular transportation and electricity in most areas.

Revival of hope

A ray of hope lit up their hearts, however, months after the Yolanda disaster. By this time, the situation had become almost normal. In July 2014, DOST VIII started a caravan on Republic Act 7687 or the DOST Scholarship Program which targets poor but talented and deserving students, as well as the Merit Scholarship Program, a socialized scholarship for students whose socio-economic income is above the prescribed socio-economic indicator from the RA 7687. Both programs are implemented by DOST through one of its agencies, the Science Education Institute (SEI).

The DOST VIII scholarship unit moved around the whole region to campaign for the program and reached as far as those island municipalities and other areas not frequented by other government agencies.

As a result, Region VIII produced 5,765 takers (who took the exams) representing 40% of the national takers who numbered 14,500. The turn-out of applicants for the scholarship in 2014 generated a 51 percent increase from 2013 which had 3,806 takers for the same scholarship program - a tremendous increase from previous numbers generated by the program. This can be attributed to the opportunity and hope that the program offered these high school students who thought they did not have any other options for college. Surprisingly, even those municipalities that have not had any applicants for quite a long time produced their share of takers for the scholarship.

The results of the September 20, 2014 Undergraduate Scholarship Examination provided Region VIII a total of 319 passers - a 36 percent increase from the previous year which generated 234 passers. The new set of scholars filled up the absence of scholars in other municipalities in the region.

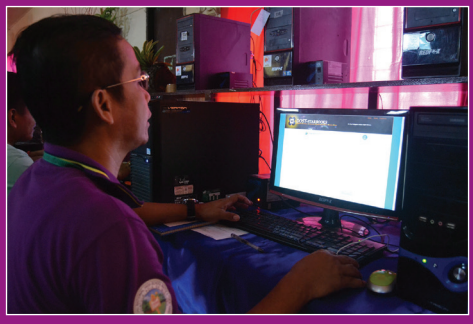
Now, Region VIII comprising of six provinces, 143 municipalities and seven cities, has at least one scholar per municipality - the only region with such accomplishment as far as undergraduate scholarship implementation is concerned, specifically, RA 7687.

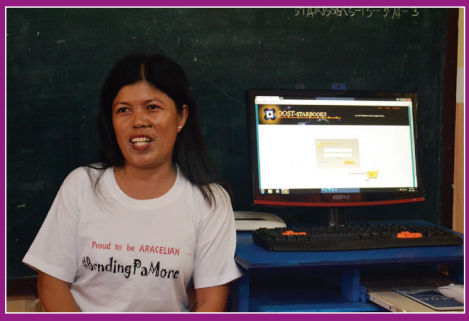
Truly a huge leap for a region seriously devastated by a typhoon of unparalleled ferocity less than two years ago. Not only did it destroyed infrastructure and took away lives; it broke its victims' hearts as well and took away their hopes as they sensed a specter of hopelessness in the horizon.

Or so they thought. And then they learned about DOST's scholarships. Now their hearts are whole again and their hopes rekindled.

OrMin schools get DOST's digital science library

By **ESPIE ANGELICA A. DE LEON,** *DOST-STII*





Six schools in Oriental Mindoro recently joined the growing list of academic institutions in the province that acquired the Department of Science and Technology's (DOST) internationally awarded digital science library dubbed as STARBOOKS, or Science and Technology Academic and Research-Based Openly Operated Kiosks.

The first of its kind in the Philippines, STARBOOKS is a stand-alone research platform with a user-friendly interface. It requires no Internet connection and contains science information from local and international sources.

Schools that received their new STARBOOKS unit last September 17, 2015 were Domingo Yu Chu National High School in Pola, Bulbugan National High School in Gloria, Bansud National High School and Cawayan National High School in Bansud, Mindoro State College of Agricultural Technology

(MinSCAT) Calapan City Campus, and MinSCAT Bongabong Campus.

The six schools were joined by MinSCAT Main Campus in Victoria, which also acquired the updated version of the groundbreaking digital library from DOST's Science and Technology Information Institute (STII), developer of STARBOOKS. MinSCAT Main Campus became the first STARBOOKS recipient in the municipality of Victoria when in 2013, it acquired two computer units installed with the country's first digital science library.

According to Filia Ofilea Vito, School Librarian III of MinSCAT Victoria, STARBOOOKS helped a lot in boosting the school's total library collection. The school is currently pushing for a university status, according to Vito, and to be granted that status, a school should at least have a total of 10,000 titles in its library, including digitized materials. MinSCAT has complied with this requirement, she said, with its current total of 12,000 titles.

If other schools would also acquire STARBOOKS, "even high schools can apply for a university status," MinSCAT President Dr. Jesse T. Zamora quipped before the start of a STARBOOKS orientation and hands-on training sessions held at MinSCAT Main Campus on the same day.

STARBOOKS earned the nod of the international community when it was awarded the American Library Association Presidential Citation for Innovative International Library Projects last June 29, 2015 at the International Librarians Reception at the San Francisco Library in San Francisco, California.

Among others, STARBOOKS contains books, magazines, journals, scientific and research papers, livelihood videos, and Britannica Ultimate Encyclopedia. These materials cover a vast array of topics on science and technology including medicine, health and nutrition, agriculture, biotechnology, physics, chemistry, computer science, information and communications technology, business and technopreneurship.

The digital science library is also customizable and easy to set up, according to STII Science Research Specialist I Arjay Escondo who conducted the orientation session.

The STARBOOKS orientation and training sessions were attended by librarians, staff and officials of MinSCAT Main Campus, representatives from other elementary and high schools in Oriental Mindoro, as well as DOST-Provincial Science and Technology Center Director Jesse M. Pine.

For inquiries on STARBOOKS which is now available online via www.starbooks.ph, email dost.starbooks@gmail.com, starbooks@stii.dost.gov.ph or stiilibrary@gmail.com

11 CARAGA schools now have DOST's STARBOOKS

By **JOY M. LAZCANO**, *DOST-STII*

Butuan City, Caraga - A globally recognized digital science library developed by the Department of Science and Technology-Science and Technology Information Institute (DOST-STII) is now being used as a handy research tool by students at 11 high schools in Eastern Mindanao.

Recently, DOST-STII launched STARBOOKS or Science and Technology Academic and Research-Based Openly-Operated Kiosks in the said sites during the Butuan City, CARAGA Region stop of the Department's national roadshow dubbed Science Nation: "Agham na Ramdam."

STARBOOKS is a user-friendly digital library of science and technology (S&T) information which may be accessed without Internet connection. It is the first science digital library in the Philippines, containing thousands of S&T resources in various formats - text and audio/ video - placed in especially designed pods set in a user-friendly interface.

STARBOOKS is one of five projects worldwide recently chosen by the American Library Association (ALA) to receive the 2015 ALA Presidential Citation for Innovative International Library Projects.

The 11 CARAGA schools now installed with STARBOOKS are Agusan National High School and ACLC in Butuan City; Mainit National High School in Mainit, Surigao del Norte; Jabonga Central Elementary School, Jabonga, Agusan del Norte; Burgos National High School, Burgos, Siargao, Surigao del Norte; Tag-abaca National High School and Loreto National High School in Basilisa and Loreto, Dinagat Islands respectively; Jacinto P. Elpa National High School and Lingig National High School in Tandag City and Lingig, Surigao del Sur; Esperanza National High School and Bayugan National Comprehensive High School in Esperanza and Bayugan City, Agusan del Sur.

"ALA, if you would ask me, is among the most influential academic bodies," said DOST Assistant Secretary Raymund E. Liboro during the launch, "so for those who have STARBOOKS in their school library, you are getting a world-class product."

Also present during the launch were key officials of DOST led by Undersecretary for Regional Operations Carol M. Yorobe and DOST CARAGA Regional Director Dominga D. Mallonga.

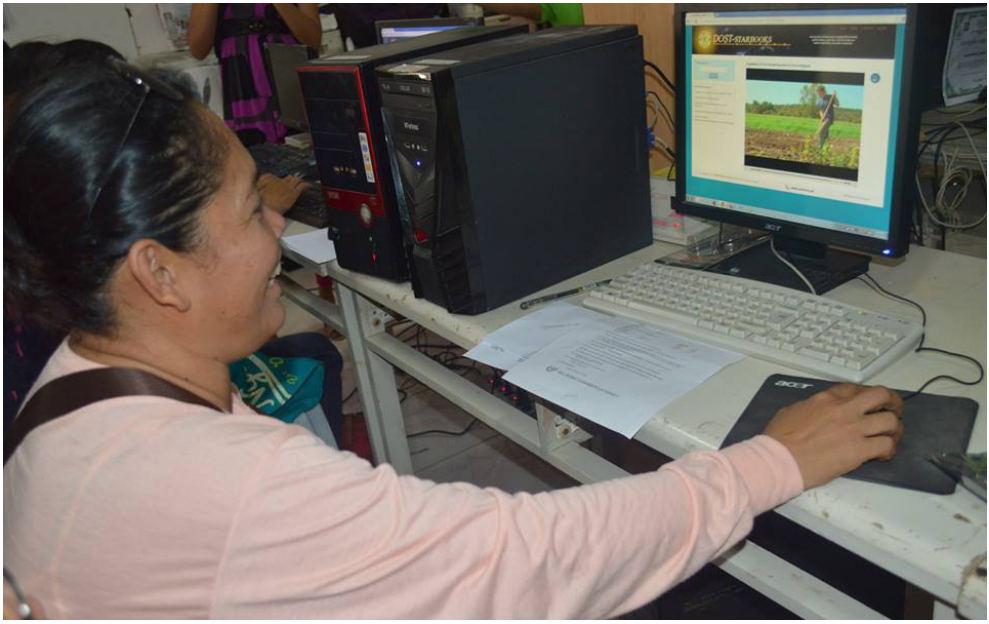
"Science Nation: Agham na Ramdam" is a continuing roadshow that showcases DOST's achievements and contributions in the development of the region's economic growth through various scientific and technological interventions. The launching of STARBOOKS was one of several activities during the event.

Perfect timing for DOST's STARBOOKS in Yolanda hit areas in Cebu

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

Thirty-three STARBOOKS units were recently installed in different public elementary and secondary schools in Poro, Tudela, San Francisco, and Pilar in Camotes Islands as well as Bantayan, Madridejos, and Sta. Fe in Bantayan Island – two areas severely affected by typhoon Yolanda in 2013.

Developed by the Department of Science and Technology-Science and Technology Information Institute (DOST-STII), STARBOOKS or Science and Technology Academic and Research-Based Openly Operated Kiosks, is the first digital science library in the country. It does not require internet connectivity and has a user-friendly interface.



With most of the classrooms, libraries, books and computers almost washed out due to Yolanda's wrath, the arrival of STARBOOKS in these areas a few weeks before the start of classes is very timely.

"With STARBOOKS, our library would now have something to offer already for our students," said Bantayan National High School Principal Noel Nervida, who expressed confidence that transfer of learning between teachers and students would be a lot easier and more effective compared to previous years.

"When I found out that STARBOOKS also has featured instructional videos on how to start different livelihoods, I know from there that this technology is very ideal for our community," said Bernard Ray G. Loon, principal of Poro Central Elementary School in Camotes Islands.

Livelihood videos are among the contents of STARBOOKS, along with Britannica Ultimate Encyclopedia, journals, investigatory materials and thousands of other resources in the fields of science and technology including mathematics and engineering.

The STII STARBOOKS team composed of Robelyn Cruz, Marievic Narquita, and Rajyl Muleta conducted orientations and trainings on the usage of STARBOOKS in Poro, Bantayan, and San Remigio for the I.T. staff and librarians of more than 100 schools.

Meanwhile, a total of 22 hard disk drives containing STARBOOKS were also turned over to DOST Region VII office for future deployment.

For more information about STARBOOKS, send an email via dost.starbooks@gmail.com or starbooks@stii.dost.gov.ph. STARBOOKS will also be featured in DOST's upcoming National Science and Technology Week slated from July 24-28, 2015 at SMX Convention Center, Mall of Asia, Pasay City.

DOST deploys STARBOOKS units, disks in Eastern Visayas

By **ESPIE ANGELICA A. DE LEON,** *DOST-STII*

High school and college students in ten campuses of Capiz State University (CAPSU) in Roxas City, Capiz in Region VI can now perform science research work more conveniently with the formal turnover of 35 STARBOOKS units by the Department of Science and Technology-Science and Technology Information Institute (DOST-STII) at the CAPSU Main Campus in Roxas City recently.

The ten CAPSU campuses now equipped with STARBOOKS units are the main campus in Roxas City, Burias, Dumarao, Sigma, Pilar, Pontevedra, Mambusao, Dayao, Sapian, and Tapaz campuses.

A project of STII, STARBOOKS or Science and Technology Academic and Research-Based Openly Operated Kiosks is a user-friendly digital library of science and technology (S&T) information which may be accessed without Internet connection. It is the first science digital library in the Philippines, containing S&T materials in text, video and audio formats from local and international sources including Britannica Ultimate Encyclopedia.

Expressing the need to support S&T projects in all endeavours of society during the turnover rites, DOST Region VI Director Engr. Rowen Gelonga revealed the latest findings of the Global Competitiveness Index wherein the Philippines ranked 52nd out of 144 countries. In 2010, the country posted a ranking of 85th.

"Despite the significant leap forward, we still have a lot of catching up to do," Dir. Gelonga stated.

S&T is seen as a major driver of productivity and prosperity for a country to move forward and be more competitive.

According to Dir. Gelonga, DOST is trying to help the Department of Education and the Commission on Higher Education in efforts to boost education and human resource development in the field of S&T via STARBOOKS.

"STARBOOKS is not just an IT component," emphasized Dir. Gelonga. "In the long term, we expect CAPSU to be able to contribute to our knowledge holdings in STARBOOKS." He explained that instead of being a mere user, CAPSU will also get to contribute its own cache of knowledge to the vast database already available in STARBOOKS.

"This can help our students and also our LGUs, particularly those in the field of S&T. We hope to make the best out of what we have today," said Capiz State University President Dr. Editha L. Magallanes in her welcome remarks.

Likewise, a total of 50 hard disk drives containing STARBOOKS were also turned over to Region VI for deployment to select schools as part of a Department of Budget and Management-STII program that seeks to deploy a total of 155 hard disks equipped with the digital S&T library among Yolanda-hit areas in Regions VI, VII, and VIII. CAPSU is among 10 other schools in Capiz identified by the Provincial Science and Technology Center as beneficiaries in the region.

Aside from Dir. Gelonga and Dr. Magallanes, signatories for the Memorandum of Understanding for both STARBOOKS and deployment were STII OIC Raymund E. Liboro (represented by STARBOOKS Admin Coordinator Robelyn Cruz), Department of Education-Capiz Schools Division Superintendent Dr. Miguel Mac Aposin, and DOST-Capiz Provincial S&T Director Engr. Gerbe B. Dellava.

The signing was followed by a STARBOOKS orientation and training session for the attendees composed of campus administrators and library personnel from the ten CAPSU campuses.

Also available in STARBOOKS are DOSTkarte livelihood videos, journals, and investigatory materials. STARBOOKS is also a useful tool for scientists, technopreneurs, and other S&T professionals. Aside from academic institutions, government offices, NGOs, and LGUs across the Philippines' 17 regions, are now designated STARBOOKS sites.

Meanwhile, the distribution of hard disks in Region VI is the first phase in the three-region deployment of 155 disks.

For more information about STARBOOKS, email dost.starbooks@gmail.com or starbooks@stii.dost.gov.ph.

P'sinan universities thankful for DOST's STARBOOKS

By **ROMELIE JANELLE MARANAN,** *DOST-STII*

SAN CARLOS, Pangasinan - Three universities in Pangasinan now have access to the country's first digital science library, being the new recipients of the Department of Science and Technology's (DOST) Science and Technology Academic and Research-Based Openly Operated Kiosks or STARBOOKS.

Developed by experts from DOST's Science and Technology Information Institute (DOST- STII), STARBOOKS is a stand-alone, one-stop information source, containing thousands of S&T resources in various formats- text and audio or video, placed in especially designed pods made with user-friendly interface.

Schools now installed with STARBOOKS are Virgen Milagrosa University Foundation (VMUF) in San Carlos City, Pangasinan

University- Bayambang Campus (PSU-Bayambang), and Pangasinan State University- Asingan Campus (PSU-Asingan).

The VMUF campus hosted the STARBOOKS installation, orientation and training. Participants were librarians and IT staff from both universities, as well as the DOST- Provincial Science and Technology Director Felicidad Gan and staff.

"We are very grateful that the DOST, a government agency, has projects that are as good as STARBOOKS. Other government agencies should also do public- private partnerships like this, especially in schools since this is for the benefit of our students," said VMUF Vice President for Administration Dr. Angelo B. Juan.

According to Caroline Castillo, VMUF Head University Librarian, DOST- STII will be the school's partner all throughout their endeavor towards academic excellence.

"The materials contained in the STARBOOKS will be a great addition to our resource collection. The students will be able to do research easily," Castillo added.

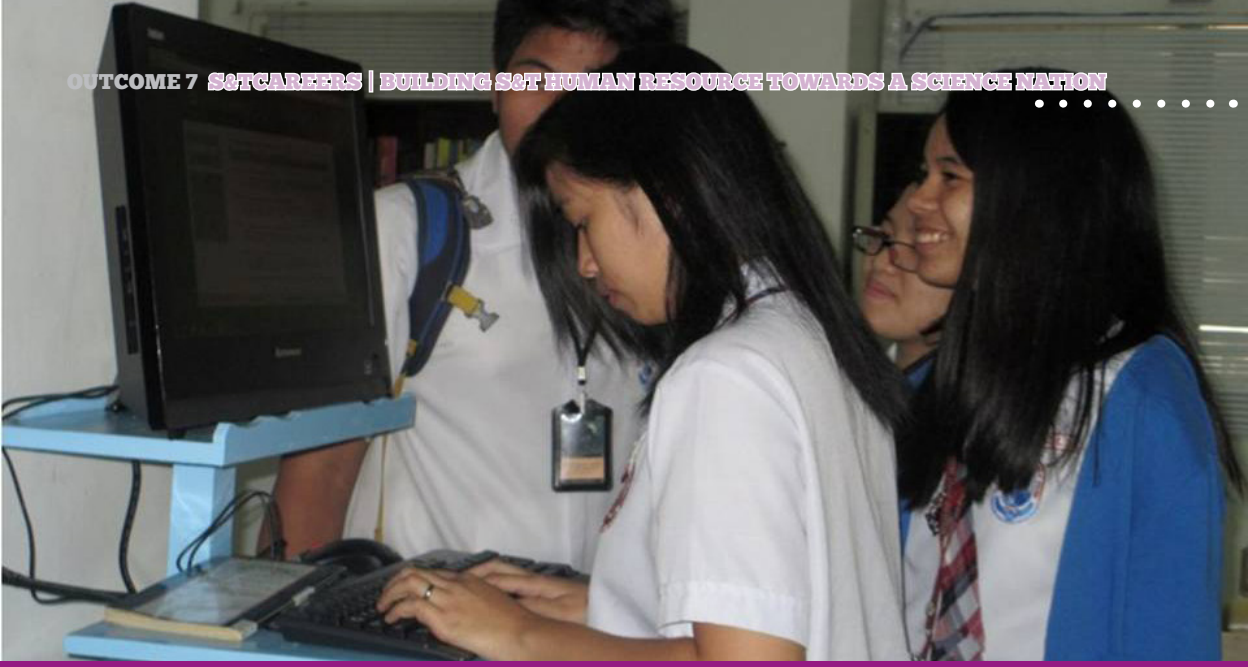
PSU- Bayambang College Librarian Aida Payumo, on the other hand, would like to recommend acquisition of STARBOOKS to her fellow librarians in other universities.

STARBOOKS contains books, magazines, journals, scientific and research papers, livelihood videos, and Britannica Ultimate Encyclopedia which cover topics on science and technology including medicine, health and nutrition, agriculture, biotechnology, physics, chemistry, computer science, information and communications technology, business and technopreneurship, among others.

Just recently, STARBOOKS received the American Library Association Presidential Citation for Innovative International Library Projects at the International Librarians Reception at the San Francisco Library in San Francisco, California.

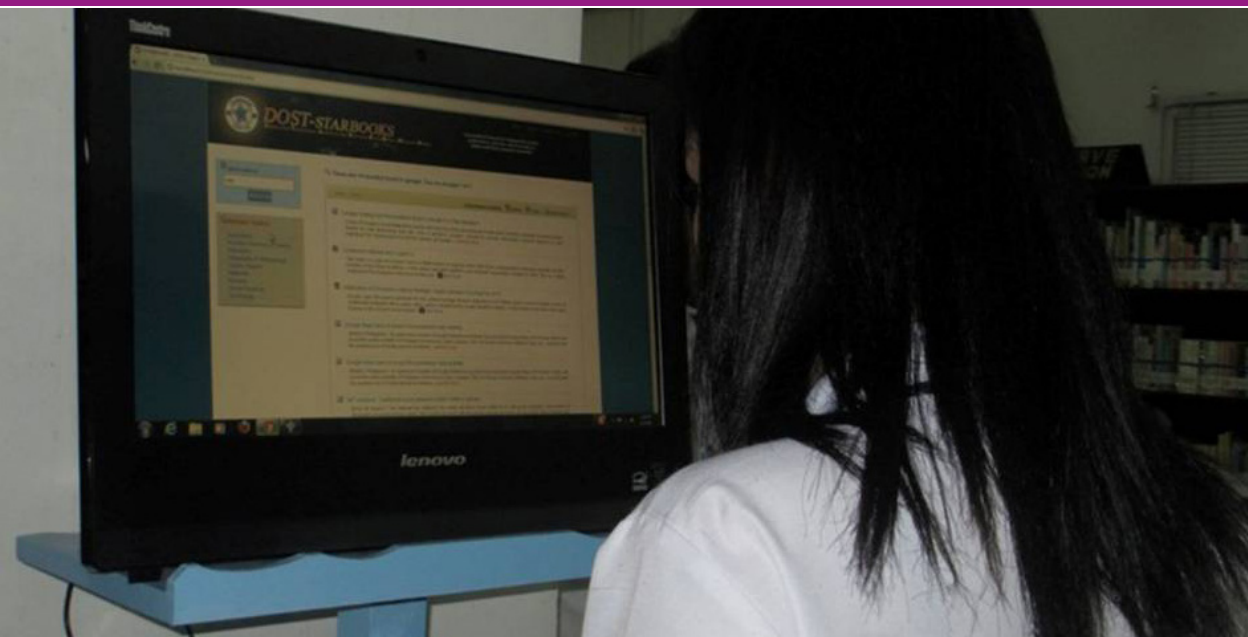
Aside from the stand-alone units, STARBOOKS online was also introduced to the three universities.

For inquiries on STARBOOKS which is now available online via www.starbooks.ph, email dost.starbooks@gmail.com, starbooks@stii.dost.gov.ph or stiilibrary@gmail.com.



University of Perpetual Help System Dalta acquires STARBOOKS from DOST

By **ESPIE ANGELICA A. DE LEON,** *DOST-STII*



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

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

The information contained in STARBOOKS are in various formats – text, video, and audio – from local and international sources.

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

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

"STARBOOKS is STII's way of bringing our science collection closer to the students," said Science Research Specialist II Louise Ian de los Reyes of DOST-STII in her presentation during the launch.

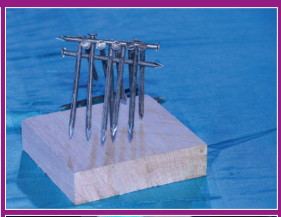
The DOST-STII library contains around 80,000 titles in print and non-print formats covering a vast range of S&T fields – from chemistry, physics, and math to computer science and information technology.

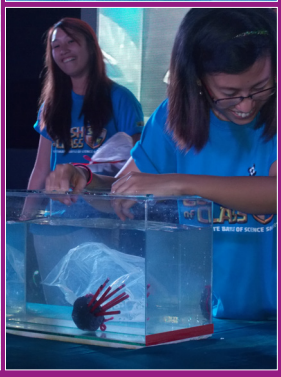
University Librarian Aniline A. Vidal decided to have STARBOOKS installed after seeing one such unit at a university in Davao. "I found it interesting. I told myself I will avail of STARBOOKS to have additional resources for the students and the faculty. The more collection you have, the more it will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

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

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

For more information about STARBOOKS, email dost.starbooks@gmail.com or starbooks@stii.dost.gov.ph.





In a class of their own: Kids prove science smarts in Clash of Class

By **ESPIE ANGELICA A. DE LEON,** *DOST-STII*

Overall champion Baclaran Elementary School Unit II with SEI's S&T Manpower Education Research and Promotion Division Chief Ruby Cristobal (left), DOST Undersecretary for Scientific and Technological Services Dr. Rowena Cristina L. Guevara (right), and Desiree Gestiada of Manila Ocean Park (second from right).

It was a clash of science smarts alright, but it was no quiz bee inside an auditorium.

Instead of contestants quietly sitting on chairs onstage, ready to answer science questions fielded to them by the quizmaster, competitors huddled around their tables excitedly to create and perform fun, science-based items and experiments amidst Manila Ocean Park's amazing aquatic displays.

Tinkering with everyday materials like sticks, nails, strings, pencils, straws, bond paper, tape, eggs, and others, each team raced against time to prove that their school is the best and that they've got the smarts.

In the end, Baclaran Elementary School Unit II, composed of Princess Diane Daval Santos, Issa Marian Lazatin, Dave Paradela, Cris Miole, Sophia Anamarie Benitez, their teacher Vilma Dames and coach Martha Dealino of UP Diliman's Electrical and Electronics Engineering Institute, emerged as overall winner in the elementary division of "Clash of Class."

Organized by the Department of Science and Technology's Science Education Institute (DOST-SEI) and Philippine Science High School System (DOST-PSHS) in cooperation with Manila Ocean Park, "Clash of Class" was one of the activities during DOST's National Science and Technology Week from July 24-28, 2015.

DOST-SEI Dir. Dr. Josette T. Biyo delivers her opening message

Second placer Magat Salamat Elementary School

Third placer Amado V. Hernandez Elementary School

"We want you to experience that science is not just a subject that is memorized, that science is not difficult, that it is fun. We want to excite you, put a spark in your eyes, and put a smile in your faces whenever you encounter science in your life," SEI Director Dr. Josette T. Biyo told the young participants in her message during the opening ceremony.

Aside from Baclaran Elementary School Unit II, the other competing schools were Antonio Luna Elementary School, Magat Salamat Elementary School, Bagong Tanyag Elementary School, Almanza Elementary School, Bagong Silang Elementary School, Amado V. Hernandez Elementary School, and Manuel L. Quezon Elementary School. Each school or team also included one teacher and a DOST scholar who served as the team's coach scientist.

One of them was Robert Padrina, Weather Specialist 1 of PAGASA. "Today, we went out of the forecasting center to mingle with kids," he shared. "This is a good opportunity for us to share with them what

a scientist's work is all about, instead of just being in the confines of our laboratories."

The games involved poking sharpened pencils into a bag of water without causing it to leak, solving puzzles using tangrams and popsicle sticks, creating a model jellyfish that will not readily sink, balancing 14 nails, pouring five different liquids in a glass to form a Density Tower, keeping an egg from breaking when dropped from a height of five meters, hitting a fixed target using mirrors and a prism, and many others.

"The games were super amazing. They were very easy but super addictive," enthused a participant from Bagong Tanyag Elementary School.

"What I learned from "Clash of Class" is how to enjoy mathematics and science, that it does not have to be hard," said another participant, a Grade 5 student from Almanza Elementary School. "Other kids should also learn math and science so they will understand its importance in our lives."

"It was fun and we learned a lot of things, like teamwork and cooperation within a group," shared a Grade 6 student from Amado V. Hernandez Elementary School.

Another participant from Bagong Tanyag also mentioned the value of creativity. "Each one was able to prove his ability to create. If we don't use our creativity, we will not be able to finish each game," he said.

After the elimination round, five teams advanced to the final round, namely Amado V. Hernandez, Magat Salamat, Manuel L. Quezon, Antonio Luna, and Baclaran Elementary School Unit II.

In the end, Baclaran Elementary School Unit II stamped its class after 10 grueling games which enhanced the students' skills, knowledge, and creativity and set them on the path toward becoming smart scientists which is the objective of "Clash of Class."

Gaining a strong second place finish was Magat Salamat while Amado V. Hernandez emerged as the third best team in the annual competition.

Baclaran Elementary School Unit II teacher Vilma A. Dames revealed that prior to "Clash of Class," their principal's advice to them was simple: You have nothing to review, you just have to enjoy and do your best.

The team members, who dream of becoming either doctors or engineers someday, did not expect to win, which made their victory even sweeter.

"We are happy that we placed first and that we will also become DOST scholars someday," remarked Issa Marian Lazatin who is in Grade 6.

Coach scientist Martha Dealino summed it best however. "Our victory is just a bonus," she claimed. "Our real victory is knowing that the kids enjoyed the experience and that it ignited their passion for science and technology."

In the high school division, "Clash of Class" was won by Pasay City East High School composed of Rachel R. Maculi, Mark Joshua Lorico, Rhicalline Pabro, Sean Troy Ros, Jesie Dhiocane Petalio, teacher Raquel Besmano and coach scientist Andrea Adorna, a chemist from DOST's Philippine Textile Research Institute.

In her message, Biyo expressed DOST's hope that the youngsters will eventually be the next wave of DOST scholars and the next breed of scientists and engineers who will provide solutions to many of the country's pressing problems.

Building a pool of future scientists and technologists

By **ESPIE ANGELICA A. DE LEON,** *DOST-STII*

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

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

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

Among these programs are the following:

RA 7687-The Science and Technology Scholarship Act of 1994

The program is geared toward poor but deserving youngsters who want to take up science and technology courses. More than 3,000 scholarship slots in identified priority areas are available every year in select institutions to ensure that all municipalities are covered.

Merit Scholarship

Qualified college juniors taking up select engineering, basic and applied science courses stand to benefit from the Merit Scholarship program. The remaining two or three years of the student's tertiary studies will be covered under the program.

Junior Level Scholarship for BS Meteorology

The scholarship is provided to qualified third year college students enrolled in BS Meteorology. The remaining two or three years of the student's tertiary studies will be covered under the program.

Government Initiatives on Fellowships for the Talented in the Sciences for the Disadvantaged (GIFTS)

If the Merit Scholarship Program is for third year college students, GIFTS is for incoming college juniors. Like the S&T Scholarship Act of 1994, GIFTS is DOST's special gift for underprivileged youngsters who would like to continue their S&T courses and become the country's next generation of scientists and technologists. To avail of the privileges, students should be of good academic standing.

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

GREAT-M is also for incoming juniors from underprivileged families. However, this program caters to students from Mindanao. Like GIFTS, those who wish to avail of this scholarship should also be enrolled in a science or engineering-related course and be of good academic standing.

Accelerated Science and Technology Human Resource Development Program (ASTHRDP)

ASTHRDP awards MS and PhD scholarship grants to eligible individuals in identified S&T areas. In particular, the program provides the following: free tuition and other school fees, stipends, book allowances, group accident insurance, thesis or dissertation funding, and transportation allowance in cases when students will study in universities located outside their provinces. The program is implemented by DOST in partnership with its agencies the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development, Philippine council for Health Research and Development, and Philippine Council for Industry, Energy and Emerging Technology Research and Development, as well as higher education institutions.

Engineering Research and Development for Technology (ERDT)

Scholarship is one of four components of ERDT which is a consortium of eight universities, namely UP Diliman, UP Los Baños, Ateneo de Manila University, Central Luzon State University, De La Salle University, Mapua Institute of Technology, Mindanao State University-Iligan Institute of Technology, and University of San Carlos. ERDT's objective is to produce highly skilled MS and PhD graduates in engineering. The scholarship privileges are as follows: free tuition and school fees (not exceeding P45,000 a year), stipend, book allowance, thesis/dissertation grant, research grant, and transportation allowance.

Philippine Science High School System

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

Fast-track Science and Technology Scholarship Act of 2013

No matter how many scholars are enrolled, they wouldn't amount to excellent professionals later on if excellent teachers aren't around to develop their skills and equip them with adequate knowledge. Thus, this program aims to bolster the learnings of these S&T students by tracking graduates of science, math and engineering courses and encouraging them to teach in secondary schools.

Joseph at the Power Measurements, Inc. (PMI) office in Lapu Lapu.

Dr. William H. Hardy, PMI founder, CEO and president, in a meeting inside the PMI office.

DOST scholarship turns poor farmer's son into skilled engineer

By **ESPIE ANGELICA A. DE LEON,** *DOST-STII*

"Tonight, I would like to look back to where I came from and look forward to where I am going. I am a son of a farmer and my parents are very hard-working," so stated the son of a sugarcane farmer in a forum attended by Department of Science and Technology (DOST) officials and staff, mediamen, and students.

All ears were on the young man as he confidently stood on the podium to tell them his story.

He is Joseph D. Gimang from Lapu Lapu City, Cebu. His parents never reached high school; his father finished only up to grade 2 while his mother finished up to grade 6. He is the youngest in a family of nine and times were hard.

Yet, despite these, young Joseph had his hopes and dreams alive. As a boy, he wanted to follow in his dad's footsteps and be a farmer too. Later on, he harbored dreams of becoming a lawyer. All that changed in high school when he realized he wanted to be a doctor. But then the teenaged Joseph loved building things and so he finally decided to be an engineer.

"The only treasure we can leave you is education," his parents' words rang in his heart every day. And indeed, he pinned his hopes on education. And education it was that spurred him on to what he has become today.

Now, Joseph spoke to the crowd inside the Elena O. Diola Memorial Hall of the DOST Region VII office in Lahug, Cebu City as a former DOST scholar turned successful electronic hardware design and printed circuit board development engineer.

The event at hand was the DOST Scholars Forum, held last June 19, 2015 where scholars from Region VII gathered to obtain life and career tips from past scholars who are now successful and productive professionals.

One of them was Joseph. Only, he still does not consider himself successful…yet,

despite his challenging and already fruitful journey.

"Career-wise I'm still beginning my journey," he stated. "Let's say, I will consider myself successful in this field when I've already invented something that helps a lot of people."

His story

Joseph proceeded with his narration, and as he spoke, he elicited oohs and aahs, and a lot of laughs and applause from his listeners.

As a high school student, he claimed, he was serious about taking the DOST scholarship.

"I submitted the requirements at the very last minute. I took the exam and there were hundreds of us in our school who took the exam. By God's grace, I passed," he recounted. "I believe that was an answered prayer because He knows that I cannot go to school without the scholarship."

He enrolled in communication engineering at the Technological University of the Philippines-Visayas where the tuition fee was only P600 pesos per term, with three terms in a year. With his scholarship, Joseph even got to support his older brother's schooling.

After graduation, Joseph had a string of jobs – one of which was at a multinational company in Lapu-Lapu City where he worked as a hardware design engineer. It was here that he fell in love with R&D work and its many challenges.

Now, the farmer's son is working at Power Measurements, Inc. (PMI) – a high technology R&D and product assembly startup also in Lapu-Lapu City which he helped establish with some former colleagues.

PMI delivers total solutions in field instrumentations and electricity power metering systems. Its product development team boasts of core competencies in electronic/electrical hardware design and validation engineering, software development and validation engineering, mechanical design engineering, systems level test and validation and product support.

"Working there for just a few months has lifted my skills in electronic design and circuit design," he claimed.

PMI's founder, CEO and president, Dr. William H. Hardy, serves as chair of several American National Standards Institute committees in the field.

"He loves to work here because he saw a lot of potential in Filipino engineers," Joseph disclosed about his boss.

Pleased with DOST scholars

The very first person hired by PMI when it was established in 2014 was a DOST scholar. "He's one of my very best people," Hardy beamed as he revealed this fact with a tone that spoke of pride.

He continued, "Before that, I went over to San Carlos University, told the technical engineering department head that we would like to get a student or graduate student to work part time. I needed someone to help with one particular piece of software-related technology. He said, 'Oh, I have a very bright master's degree student who I think would be

perfect for that.' Well, he is very bright and he's also a DOST graduate fellow."

When summer arrived, PMI hosted seven summer interns, two of whom were DOST scholars arranged by the DOST Regional Office to work for PMI. "I've been very impressed by the quality of the students," Hardy said. "I think it's a great program."

At present, PMI has three former DOST scholars onboard, including Joseph. The other two are Junior Software Engineers Mark Anthony Cabilo and Jedidiah Tamayo who both work part time. Joseph, on the other hand, works full time.

"They're bright, they're inquisitive, they want to learn, and they aren't afraid to tackle hard problems and figure out how to solve them. That's what you need when you're doing the kind of work we do. You probably always start out not knowing how to solve the problem, but you have to have a bright, inquisitive mind and really dig in, you know, go to the Internet, go to the books, figure out how to do it and get it done. They learn things very fast. That's what you need," said Hardy about the three.

His advice to scholars

Joseph himself agrees with his boss.

"We Filipinos have deep, great potential. We are just not overconfident but shy," Joseph lamented. "We are shy to show it, that we have the potential."

The young speaker who captured the attention of his audience with his sense of humor encouraged the youngsters to give back to the country after they step out of the academe and carve their own careers. He emphasized that one way of giving back is to develop a technology – a product that is not just beneficial, but originally Filipino-made.

"We have the tendency to be proud," he reminded the scholars. "But no matter what you achieve, no matter what you become someday, always consider yourself a student. Because we will keep learning, so much learning."

Learning is at the center of Joseph's plans, as he wants to learn as much as he can in order to invent something that will help a lot of people.

"Remember, intelligence without diligence, is nothing," he stressed to the young members of the audience.

When Joseph D. Gimang was done with his talk, the applause came easy. No doubt, his audience was impressed. But for sure, not only were the students impressed; they were inspired as well, by his all too familiar story of a kid who was poor, yet dreamt big, studied hard, kept on learning, and never quit, until great opportunities came along.

One of these opportunities was a college education, which came in the form of a scholarship by DOST.

For more about DOST's scholarships and other programs, go to http://www.sei.dost.gov.ph/or www.nstw.gov.ph.

Filipino S&T workers double in 20 years, according to DOST study

By **ESPIE ANGELICA A. DE LEON,** *DOST-STII*

The number of Filipino professionals in Science and Technology (S&T) doubled from 1990 to 2010, with nursing, midwifery, and engineering registering the most number of professionals each.

This was revealed in a publication by the Department of Science and Technology-Science Education Institute (DOST-SEI) titled "Human Resources in Science and Technology in the Philippines," launched on April 22, 2015 at the Astoria Plaza Hotel, Pasig City.

The publication contains estimates on the country's S&T professionals, established by a study conducted by SEI which utilized National Statistics Office census data for 1990, 2000, and 2010, among others

According to the study, there were 362,000 estimated workers in the Philippines in 1990. This estimate climbed to 593,000 in 2000 and leapt to 721,000 in 2010, posting an impressive 99.17 percent increase from 1990 to 2010.

This incredible growth of the Philippines' S&T workforce suggests a positive effect on the economy, as "knowledge and technological creation through research and development leads to better performance of major S&T-based industries," according to SEI Director Dr. Josette T. Biyo

Of this total number, 211,000 or 29.2 percent of local S&T personnel were concentrated in the National Capital Region. Meanwhile, the Autonomous Region in Muslim Mindanao had the least number of S&T workers with only around 5,000.

"Our programs aimed at producing scientists and engineers have always been anchored to the belief that science, technology and innovation will lead us to development and by having a clear picture of our human resources in the field, we'll know how much more we should work towards this endeavor," explained Biyo.

However, the study also revealed that not all S&T occupational groups recorded an increase in number of workers. In particular, key professions in the fields of mathematics, statistics, life science, physics, and chemistry, indicated a huge dip in their numbers.

"We really need to focus on producing professionals from fields that have seen a decrease. We shall consider these findings in carrying out our scholarship, advocacy and innovation programs," Biyo emphasized.

In addition, the country was also found to be lagging behind many other countries in terms of percentage of S&T workers to the total number of workers in a country. According to the study, S&T professionals in the Philippines made up a measly 5.6 percent of its overall workforce, putting the country in 31st position among 34 countries ranked for this purpose. Among these countries were Belgium which ranked first, Australia, Netherlands, US, UK, Germany, South Africa, India, and Indonesia.

Meanwhile, the number of Filipino S&T overseas workers rose from 40,000 in 1990 to 113,000 in 2010.

The publication, "Human Resources in Science and Technology in the Philippines", hopes to provide knowledge and policy directions to the local science community and be used as a basis for the formulation of S&T programs in the country especially where human resources are concerned.

Education for human resource development is one of DOST's main thrusts and will be one of the focal points at the upcoming National Science and Technology Week (NSTW) slated from July 24-28, 2015 at SMX Convention Center in Pasay City.

Copies of the publication will be distributed to government and academic agencies. It will also be available for downloading via the SEI website (sei.dost.gov.ph).

Students learn from local experts in DOST's int'l science fair

By **ESPIE ANGELICA A. DE LEON,** *DOST-STII*

High school students from science schools in seven countries got the chance to be mentored by Filipino experts during the just concluded 2nd Philippine International Science Fair.

Organized by the Department of Science and Technology-Philippine Science High School System (DOST-PSHS) in partnership with First Pacific Leadership Academy, the biennial fair aims to promote a culture of science among the youth.

For its second edition, the fair tackled issues concerning the environment and climate change with the theme "Innovate to Mitigate."

Students from Indonesia, Japan, Korea, Malaysia, Singapore, Sweden and Philippines had the opportunity to closely interact with Filipino specialists who gave them valuable feedback and advice on their mini-projects during the prototyping sessions. For this activity, the participants were divided into teams with each team developing product prototypes, design, or project proposal of innovations that will mitigate or prevent disasters. Three scenarios were given, namely Lake Management: Saving Taal Lake, Urban Living: Making Metro Manila a Safer Place to Stay, and Sustaining Permaculture Farming.

According to Ceciree Villanueva of Cavite Nat'l Science HS, UP Diliman Geology and Environmental Science Prof. Dr. Carlos Primo David advised their team to focus on the root of the problem, on ways to stop people from throwing garbage into the creek.

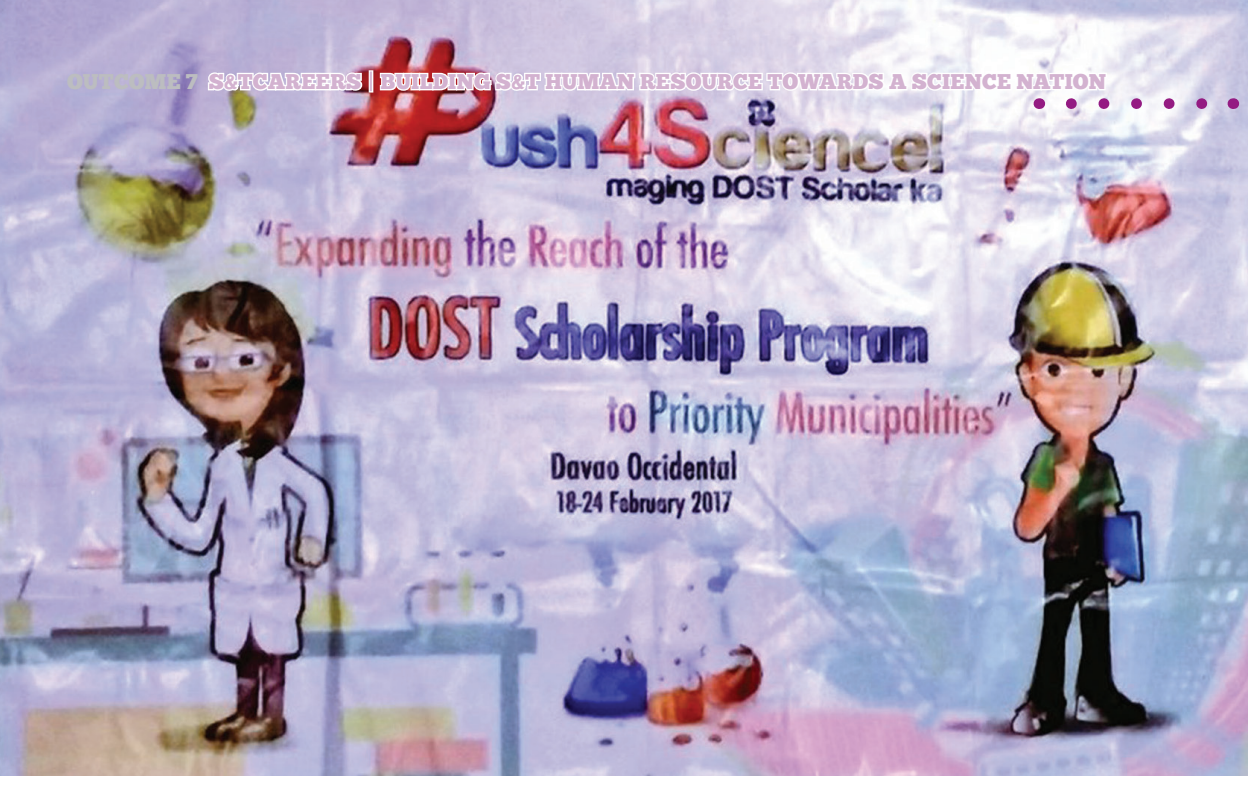
Their team's project, which they dubbed "Project Sphyder (Specialized Physical Debris Remover)" was chosen as "Best Project" under Scenario 2. During a study tour in Marikina, Villanueva and her groupmates Demi Antonette Jacomilla of PSHS Central Mindanao, Chiara Borgueta of PSHS Eastern Visayas, Justine Romero of PSHS Bicol, and Rohith Srinivas of Raffles Institution in Singapore, learned that during heavy rain, garbage clogs the water under the bridge along Marikina River in Brgy. Tumana. SPHYDER, they said, is a filter-like technology especially designed to remove the garbage faster, more efficiently and cost-effectively and eventually clean up the water.

Dr. David and another expert, UP Diliman Environmental Science and Meteorology Associate Prof. Dr. Tolentino Moya, also taught them that biological and chemical debris also pollute bodies of water aside from physical debris such as garbage.

Another activity, called Meet the Experts also gave the young participants a chance to listen to Filipino experts who shared their career experiences and knowledge. They were Dr. Perry S. Ong, professor and head of the Biodiversity Research Laboratory in UP Diliman's Institute of Biology and Dennis G. de la Torre, Research Fellow at the Center for Local and Regional Governance in UP Diliman's National College of Public Administration and consultant on the Special Committee on Climate Change in the House of Representatives.

Other scientists who shared their expertise during the science fair were UP Diliman Biology Prof. Dr. Zubaida U. Basiao, UP Diliman Biology Assoc. Prof. Dr. Luis Ma. Garcia, and Philippine Rice Research Institute Supervising Science Research Specialists Rizal G. Corales and Dr. Ricardo F. Orge.

A design thinking workshop, study tours, teachers' forum, and poster making contest were also held during the four-day science fair.



More scholars, stronger pillars

By MARCO D. MELGAR, *DOST-SEI*

Rose Anne Manzano is poised to become valedictorian when she graduates from high school next summer. She dreams of being a civil engineer via the scholarship route. Belonging to the top of the class will certainly help her chances of landing a scholarship.

"Sana may scholarship kasi hindi naman kaya ni Papa ko (Hopefully, there would be a scholarship because Papa cannot afford it)," said Rose Anne whose father, their sole provider, is a farmer.

The availability of local scholarship grants for students like her in their town of Banayoyo in Ilocos Sur is somewhat of a rare find. Lack of information about national scholarship programs like that of DOST's Science Education Institute (SEI), along with others factors such as distance to government centers and poverty, further dims her chances of becoming a scholar.

Rosa Anne is just one of the prospective DOST-SEI undergraduate scholars from 71 municipalities nationwide who face these issues which cause the lack of applicants to the program.

From 2010 to 2012, 329 municipalities around the archipelago recorded 'zero' number of scholars. Seventy-one of these municipalities did not even have a single applicant possibly due to lack of awareness on the program, and/or other reasons pertaining to geography and socio-demographics.

In response to this reality and in view of fulfilling the Department's target of having at least one 'Science Scholar' per municipality, DOST-SEI launched a campaign called "#Push4Science: Maging DOST Scholar ka!", a strategic marketing program that hopes to encourage applicants from the 71 identified municipalities.

Since February this year, the Push4Science Team has been conducting extensive scholarship caravans in target municipalities including Banayoyo where Rose Anne resides. The campaign has specifically reached Baras in Catanduanes; Burgos, San Benito, and San Isidro in Siargao Island; Adams and Dumalneg in Ilocos Norte; and Burgos, Quirino, San Emilio, Sugpon and Banayoyo in Ilocos Sur.

Lined up for the rest of the year are municipalities in Abra, Isabela, Nueva Ecija, Tarlac, Pangasinan, Masbate, Palawan, Antique, Misamis Occidental, Davao Oriental, and Saranggani. Other municipalities will be reached through the DOST regional offices and Provincial Science and Technology Centers.

"We really have to go there and talk to high school students from these municipalities so we can inspire them in science and convince them to pick science as a field of study and do so by being DOST Scholars," said Dr. Josette T. Biyo, DOST-SEI's new director.

The campaign has been crucial not only in informing students like Rose Anne of the benefits of the scholarship but also in delivering key promotional materials and application forms for the program.

While lack of awareness about the opportunity seems a common issue among the municipalities, their distance from the application and testing centers is another major issue.

Banayoyo is one hour away from Vigan, the nearest testing center. Municipalities like Adams in Ilocos Norte, a 5th class town located in the forest, for instance, require four to five hours of travel to Batac where the testing site is located. Lack of public transportation from the said area—a newly declared Wildlife Protected area—makes it even more difficult for students to apply and take the qualifying exam.

In these cases, the support of the local government units (LGU) is a must. The Push4Science Team ensures commitment from concerned LGUs to support in the whole application process of their high school students as a form of "investment" for molding future experts of their municipality.

"Providing a vehicle for the submission of application forms and during the examination day is already a huge gesture of belief from the local leaders that their kids can make it as DOST Scholars," Biyo said. "That will help us achieve our goal not just of having applicants and scholars but ultimately of developing scientists and engineers in these areas."

Indeed, all it takes is little bit of "push" and encouragement for our kids to nail that chance of becoming impact players. As we produce more highly skilled professionals from these scholars, we are building stronger pillars for this nation and slowly, we are putting our stamp in the global arena as having one of the more competitive human resources in the world.

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