The digitalization of our world is affecting our lives in a manner unforeseen even just a few years ago. Technological advancements are taking over in a dramatic and unprecedented rate, more rapidly than our current capacities can accommodate. And the evidence of disruption is beginning to reach our shores, with the continued expansion of artificial intelligence, jobs automation, supercomputing platforms, intelligent robots, self-driving cars, neuro-technological enhancements, genetic engineering — all collectively tagged under the banner of the Fourth Industrial Revolution, or IR4.0.

Faced with this onslaught of changes, the Science Education Institute acknowledges that a new dimension has been added to its mandate to undertake S&T human resources development. Now this mandate pivots around the concern of how the scholarship programs, promotion of STEM careers, and introduction of S&T educational innovations contribute towards building the country’s capacities to meet the industry demands of IR4.0.

It is beyond doubt that education remains the key to preparing today’s youth for the many challenges of tomorrow, but education must also transform in order to keep up with this disruptive new era. There is a much greater sense of urgency to entice more of our youths to become future scientists and researchers. There is also a growing sense of collaboration and cooperation among countries to share S&T knowledge and resources.

We are rightfully proud of the fact that some of our higher learning institutions have been developed to such a degree that they are already attracting a number of foreign scholars who wish to study in the Philippines. As the Institute steps up our provisioning of S&T scholarships, we are aware of this vital need to transform our learning processes in order to prepare our students, and consequently the Filipino people for both the opportunities and challenges that will be brought about by IR4.0.

**Learning and relearning in the 21st century**

It is a fact that Science, Technology, Engineering and Mathematics (STEM) education has to be instilled more in our youth as these disciplines will provide them with the knowledge and skills needed in an increasingly tech-driven society. At the same time we are doing our share in enabling our learning environment to adapt to innovations and disruptions, from the knowledge-delivery and rote-learning model that is fast becoming antiquated, to a system and environment that encourage greater collaborative learning, more creative problem-solving, and more autonomous thinking among educators as well as their students.

Adaptability will be the key competitive currency of the 21st century, and towards this end, our educational system has to produce human resources with the capability to constantly relearn and reinvent themselves. To compete in the future networked economy, our children will need to inculcate in their STEM learning soft skills such as abstract and strategic thinking, creativity, nuanced interaction and communication, and even flair for humanities — skills that can blend, rather than directly compete with machines.

The Institute shares this broad educational paradigm shift with various institutions concerned with meeting the needs of industries of the future, and is taking slow yet systematic steps to establish a solid foundation for such sustained, transformative learning that will allow the Filipino youth to flourish in the Economy 4.0.
We have finally reached an era that pushes the urgent need for the country to be populated with more science and technology professionals. With the Fourth Industrial Revolution (IR4.0) underway, our education systems and processes need to undergo disruptions to help us adapt to these future challenges.

To meet the challenges of IR4.0, the Department of Science and Technology (DOST) have since made research and development and technology transfer the centerpiece of our contribution to the country’s social and economic development. At the same time, we are empowering the Science Education Institute (SEI) to adapt a broad and comprehensive measure towards helping out learners—both students and educators, adapt to the convergence of the technological systems currently happening.

Looking at these major transformations, it is easy to see that the means at our disposal still fall short of the needs and ambitions of our industries and educational organizations that seek meaningful participation in transformative learning outcomes. The availability of and access to technology-driven learning tools, contents, and solutions is a pressing concern that we must bring to fruition if we are to respond well to the brand new world of tomorrow.

In addition to human resource development, the SEI is pleased to share an active drive towards making our transition to Education 4.0—an enabling environment for removing traditional education roadblocks such as distance and limited financial resources.

Events like this help all stakeholders gain greater knowledge and understanding of the breakthroughs and inner workings that power the convergence through automation. They also fuel our drive to emphasize creative and critical skills that will fit industry demands of 4.0.

As demonstrated by the unveiling of the 21st Century Learning Environment project, we are pivoting our efforts towards enabling our students and educators to meet the requirements for survival and success in IR 4.0. We know, though, that we have much to understand. One deep dive we undertook was the conference held together with the Accelerated Science and Technology Human Resource Development Program – National Science Consortium. The event gave all who attended an understanding of the importance of Big Data, the most vital component that powers the world of tomorrow we’re now facing.

Inclusiveness remains a key driver in SEI. That’s why we are also stepping up measures that will spread learning to far-flung areas of the country through simple, affordable and highly engaging technology applications. The use of already common devices such as mobile phones and free, reliable Internet connection is a promising initiative for removing traditional education roadblocks such as distance and limited financial resources.

The world of tomorrow is already upon us. Artificial intelligence, automation and robotics, big data and the internet of things are all reshaping lifestyles, industries and the jobs environment. It is an exciting, and also a very challenging one. How can we elevate our competitiveness as a country in the face of so much rapid change? How can we, at the Science Education Institute, equip our future leaders and industry personnel with the capabilities to be game-changers and contributors to national progress?

We are pleased to share with our stakeholders that our efforts to develop our S&T human resources continue to be on the upswing. In 2018, we recorded the highest number of S&T scholars supported, at 28,433, which is 25 percent higher than the previous year.

We have also opened up more avenues for those who would like to pursue advanced S&T studies abroad through foreign scholarships in priority fields, particularly in areas that are impacted by IR 4.0 like nuclear science and engineering, space science and technology, artificial intelligence, data analytics, and others. We are proudly doing our share as well to provide graduate scholarships to some of our partners in ASEAN and help promote the collective value of science scholarship and human resource development in the region.

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Such is technology’s power that it can truly bridge the education gap in our country where millions are still unable to finish school. The challenges are immense and much work still needs to be done, but little by little we are setting the stage for an educational framework that will enable the Gen Z students, and their successors, to flourish in the IR4.0 world.

DR. JOSSETTE T. BIVO
Director, Science Education Institute
Undergraduate and Graduate Scholarship Programs

In 2018, the number of scholars that SEI supported rose by 25% compared with the previous year. At the undergraduate level, CALABARZON and NCR regions continue to contribute to the bulk of the scholars, making up 83%.

The examination for the 2019 Undergraduate Scholarship Programs drew another record number with 78,712 senior high school students taking the exams. The results produced 9,852 S&T scholarship qualifiers.

New degree programs were included in the DOST-SEI S&T Undergraduate Scholarship offerings to help bridge the industrial needs of the IR4 world.

At the graduate level, the Accelerated Science and Technology Human Resource Development Program (ASTHRDP), 1,883 Master’s and 566 Doctoral scholars were supported and enrolled in basic and applied science programs delivered by the National Science Consortium (NSC). A total of 1,031 Master’s and 233 Doctoral scholars were supported by the ERDT program delivered by eight universities that constitute the ERDT Consortium, while 509 MS and 334 PhD scholars in science education were supported under the Capacity Building Program in Science and Mathematics Education (CBPSME).

Foreign scholarship programs

Six DOST-SEI scholars, faculty members from Palawan State University (PSU) and Batangas State University (BSU), completed their Master of Science in Petroleum Engineering degrees at the Universiti Teknologi Petronas (UTP) in Perak, Malaysia.

Under the DOST-SEI Foreign Graduate Scholarship program, 15 applicants were accepted to pursue advanced degrees abroad in specialized S&T areas that are not being offered locally.

The institute provided scholarship support to the DOST program “Space Technology and Applications Mastery Innovation and Advancement (STAMINA4Space)” three students were sent to Kutoshi Institute of Technology in Japan for the doctoral degree studies as part of the

Bispectral and Infrared Remote Detection Satellite (BIRDS-4) nanosatellite development project. Qualified applicants for local scholarship would be pursuing MS in Electrical Engineering focused on space technology development at the Electrical and Electronics Institute of UP-Diliman.

Employee Learning Programs

The DOST-Human Resources and Development Program (HRDP) gained the highest number of scholars supported compared to the previous three years. This is attributed to the implementation of the customized Master in Public Management Technology-based Enterprise Development (MMP-TED) delivered by the Ateneo de Manila University for the administrative staff of the DOST. The program also supported the pursuit of graduate studies abroad of four MS and four PhD scholars in several countries abroad.

DOST-SEI staff participated in conferences, seminars and other educational activities designed to enhance their skills and knowledge. They were able to gather new ideas and learn trends in science learning and teaching activities, and help enhance linkages with educational organizations.

Teacher Development and Enhancement of Learning Environment

The Science Teacher Academy for the Regions or Project STAR increased the number of innovative trainings it conducted and the number of their teacher-beneficiaries, having expanded its collaboration to 16 partner universities in various regions.

The search for the Brightest STAR was launched and concluded with the awarding of two STAR teachers for Science and Mathematics batches. The awards emerged from hundreds of participants of STAR trainings from 2014-2017 coming from Regions 1, 3, 5, NCR, 6 and 10.

A total of 42 Junior Level Science Scholarship (JLSS) graduates of 2017 from Region III attended a three-day training workshop designed to help them be more effective STEM teachers. Non-major science teachers also underwent a DOST-SEI training aimed to equip them with knowledge on subjects other than their majors to address the spiral progression of topics per grade level due to the implementation of the K to 12 curriculum.

The indigenization of science lessons for Indigenous Peoples continued with the participation of teachers in elementary schools in Tarlac and Pampanga provinces in a training workshop aimed to enhance their knowledge and skills at developing suitable learning materials in science that are culture-based and relevant to their predominantly indigenous pupils. Eighteen indigenized lesson plans in science for Grades 3-6 were refined and forwarded to Deped Region 3 for Quality Assurance.

DOST CMApps, a collection of mobile technology and other related applications widened both its platform base as well as its audience reach through partnership with Smart Communications, Inc. and uploading in Apple App Store and Google Play.

DOST-SEI inaugurated the 21st Century Learning Environment Model (21st CLEM) with facilities for information, communication and creative technologies designed for mobility and connectivity. Aiming to develop the learners’ 21st century skills on communication, collaboration, critical thinking and creativity, the classrooms were inaugurated at one of the beneficiary-schools, Inosolaban-Maravoy Integrated National High School (IMINHS).

Research and Innovation

Faculty members of the ERDT Consortium Universities attended an Engineering Faculty Research Mentoring Workshop, which presented notable spokespersons who shared strategies and tips to be effective researchers. The ERDT also held its 7th Congress, a platform for the better understanding of the dynamics between and among engineering, humanities and social science. This event was followed by the 15th ERDT Conference hosted by DOST. This is an annual event that provides an opportunity for scholars and faculty advisers to present their academic and research works and publish them in a peer-reviewed journal. With the theme “Engineering for Humanity”, the conference featured notable talks of distinguished local and foreign speakers and paper presentations.

For the improvement of the agricultural sector, the ERDT Steering Committee members embarked on a Technology Benchmarking Initiative, visiting universities and training institutions in Israel and Japan to explore technologies and innovation in the field.

Having been implemented for the past four years, Project HOTS or the Hands-on Teaching and Learning of Science through Inquiry, underwent an evaluation to identify areas of improvement, enhance its design and implementation, and recommend policies and action points to improve the teaching and learning of elementary science.

Further analyzing the data gathered in 2015 from the Survey on the Use of ICT in Teaching Science and Mathematics among selected Science, Technology, and Engineering (SITE) implementing schools in the country, the Institute developed a study focused on determining the factors that affect ICT integration in teaching among science and mathematics teachers. The results are useful in developing policies that will address the barriers to ICT integration.

The Institute, together with other DOST agencies, organized various activities consisting of science exhibits, research events, and film festival, in line with the 2018 National Science and Technology Week (NSTW).

The number of Youth Excellence in Science awardees reached another record high of 1,469 students from 332 schools. These include those who won in international Science & Technology, Engineering and Mathematics (STEM) competitions like the International Mathematics Olympiad, from which Filipino students brought home more accolades.

Community and Nation Building

The Filipino Patriot Scholars Project completed its Phase I in commendable fashion. Meant to broaden and deepen DOST-SEI scholars’ engagements in national service, the project served 2,340 beneficiaries in 2018.

DOST-SEI launched the Bangon Marawi Program in Science and Technology Human Resource Development, intended to provide scholarship benefits to students who are immediate members of the families affected and displaced from the communities by the armed conflict in 2017. Scholarship slots were awarded to 217 BS, 20 MS, and 10 PhD students.
As we experience massive global disruptions with the onslaught of new technology trends, more advanced mindsets—and specialized skills—are crucial to thrive in a rapidly evolving digital landscape. Educational systems centered around simplistic learning and distinct, limited physicalities are starting to no longer match global demands, thus stronger government-academe-industry linkages and more solid grounds for innovation are compulsory to further bridge scientific and technological gaps in the country. This effectively sets the stage for more flexible learning procedures, fostering unique expertise among Filipinos.

Today, learners must be equipped with more accessible, highly applicable knowledge that, rather than pitting them against artificial intelligence and other disruptors of the digital age, will continuously and progressively expand their capabilities to work hand in hand with these agents of change.
To this end, our government agencies together with the education sector have defined a strategic roadmap that will enable the country to produce quality learners and therefore increase human capital, actively respond to fast-changing markets, and seize more opportunities for inclusive growth.

SCHOLARSHIP PROGRAMS SUSTAIN HIGH GROWTH RECORD

DOST-SEI has seen a consistent growth in the number of scholars it supports over the past 10 years. In 2018, the Institute supported a total of 28,433 scholars—a 25% higher compared with last year’s attainment. Of the said figure, 83 percent or a total of 23,531 scholars were supported at the baccalaureate degree programs, 13 percent or 3,632 scholars at the master’s degree programs and 4 percent or 1,270 scholars at the doctoral degree programs.

Communicating to the youth the opportunities provided by the government to enable them to pursue S&T education is instrumental in helping the country build the required critical human resource pool for strengthening and expanding our S&T systems and R&D base.

UNDERGRADUATE LEVEL

CALABARZON & NCR regions continue to draw bulk of undergraduate scholars

The most developed and highly urbanized regions in the country continue to contribute to the bulk of undergraduate scholars, whose numbers make up 23,531 students or 83% of the total scholars pie.

DOST-SEI announces 946 qualifiers to the 2018 JLSS

A total of 946 regular third year college students enrolled in various S&T courses who took the examination in October 2017 qualified to the 2018 Junior Level Science Scholarship (JLSS) program for academic year 2018-2019.

The JLSS is a scholarship program under the Republic Act 2067 or the Merit Scholarship Program, R.A. 7687 or the “S&T Scholarship Act of 1994,” and R.A. 10612 or the “Fast-Tracked S&T Scholarship Act of 2013.”

FIGURE 1: Regional Distribution of DOST-SEI Scholars (2018)
Qualifiers to the program received improved scholars benefit rates in terms of tuition subsidy, monthly stipend, book allowance, among others, for two to three years under the scholarship. The current rates are the highest financial support in the scholarship programs history, designed with the intention to attract the best students nationwide to pursue science careers.

Scholars under the RA 10612 are expected to teach Science, Technology, Engineering, and Mathematics (STEM) subjects in senior high school, ideally in Mathematics (STEM) subjects are expected to teach Science, Technology, Engineering, and Mathematics (STEM) subjects in senior high school, ideally in senior high school. Meanwhile, graduates of the RA 7687 and RA 2067 Programs are required to work along their fields of specialization in the country for a period equivalent to the length of years they benefited from the scholarship program.

These programs enable DOST-SEI to pursue its mandate to accelerate the pace of knowledge-driven development. The scholars are encouraged to pursue STEM careers and contribute to the S&T human resource growth potential in the country.

New records seen as DOST-SEI opens 2019 undergraduate scholarships

The constant awareness campaign paid off as a total of 78,268 senior high school students applied for the 2019 DOST-SEI S&T Undergraduate Scholarship Examination.

Following the announcement of the availability of the 2019 Undergraduate Scholarship during a press conference on July 18, 2018 at the Philippine International Convention Center in Pasay City, DOST-SEI conducted the examination on October 21, 2018 in 288 test centers nationwide. It recorded the highest number of examinees with 73,712 senior high school students.

The results released in March 2019 revealed a new record with 9,852 S&T scholarship qualifiers.

GRADUATE LEVEL

Graduate Scholarship Programs continue to attract talent

Adding to the pool of the country's high-level scientists, researchers and engineers or human resources in S&T (HRST) is the goal of DOST-SEI's graduate scholarship programs. In a globalized, competitive, and connected world currently being birthed by the fourth industrial revolution, HRST play a vital role in advancing our collective strategy of science, technology and innovation is all important for long-term growth and economic success. (See Figure 2)

With only 270 HRST per million population, the Philippines is still below the minimum recommendation of 380 per million population by UNESCO. Nevertheless, the institute rates with pride the achievements of its graduate scholarship programs, as follows:

Accelerated Science and Technology Human Resource Development Program (ASTHRDP)

A total of 1,893 Master's and 566 Doctoral scholars were supported and enrolled in basic and applied science programs delivered by the National Science Consortium (NSC). The NSC is composed of the following universities: Ateneo de Manila University (ADMU), Central Luzon State University (CLSU), De La Salle University (DLSU), Mindanao State University-Iligan Institute of Technology (MSU-IIT), University of the Philippines-Diliman (UPD), University of the Philippines- Los Banos (UPLB), University of the Philippines-Manila (UPM), University of the Philippines-Visayas (UPV), University of San Carlos (USC), University of Sto. Tomas (UST) and Visayas State University (VSU).

Engineering Research and Development for Technology (ERDT)

A total of 1,031 Master's and 233 Doctoral scholars were supported by the ERDT program delivered by eight universities that constitute the ERDT Consortium: ADMU, Bicol University (BicolU), Central Luzon State University (CLSU), De La Salle University (DLSU), Mariano Marcos State University (MMSU), Mindanao State University-Marawi (MSU-Marawi), Philippine Normal University (PNU), University of San Carlos (USC), West Visayas State University (WVSU) and Western Mindanao State University (WMSU).

Science and Technology Regional Alliance of University for National Alliance of Development (STRAND)

The project STRAND addresses the overall goal of strengthening the capabilities of the higher education institutions in the provinces to develop human resource capabilities and offer quality STEM courses. The project has two components: STRAND 1 and STRAND 2.

In STRAND 1, various universities were identified based on their need to have a stronger faculty profile through the provision of graduate scholarships in niche fields of study. These are Cagayan State University (CSU), Palawan State University (PSU), Eastern Visayas State University (EVSU), and University of Southern Mindanao (USM).

In STRAND 2, universities have been identified to offer master's and/or doctoral programs in identified STEM degrees provided they strictly comply with the policies and standards on graduate education issued by the Commission on Higher Education (CHED). The program shall also strengthen the faculty profile of these universities through graduate scholarship grants. These are Batangas State University, Central Mindanao University, MMSU, MSU-IIT, Nueva Vizcaya State University, St. Louis University, SMU, University of Science and Technology of Southern Philippines- Cagayan de Oro City, University of Southeastern Philippines.

In a globalized, competitive, and connected world currently being birthed by the Fourth Industrial Revolution, RSES play a vital role in advancing our collective strategy of science, technology and innovation is all important for long-term growth and economic success.
Science and Mathematics scholars gather to share innovations in teaching

Developing a culture of excellence in research, coupled with encouraging increased collaboration among experts and students, is the focus of the annual National Research Conference in Science and Mathematics Education.

Its 4th outing was held last February 27-28, 2018 at the PICC in Pasay City, and provided a venue for scholars/scholar-graduates to present their thesis/dissertation outputs and update the scholars, research advisers/mentors with the latest trends on pedagogy and new ways of mentoring.

The event drew 305 participants composed of CBPSME scholars, faculty advisers, Project Directors and staff from the consortium-member universities.

The conference featured two notable speakers, Dr. Elvira L. Arellano, Associate Dean, College of Education of West Visayas State University, focused her talk on “Effective Research Mentoring Practices for Successful Degree Completion”. She highlighted the importance of communication between the adviser and student, provided tips and shared best practices in her university which produced several MS and PhD scholar-graduates.

The second speaker, Dr. Celina P. Sarmiento, Faculty from the College of Flexible Learning and e-PNU, shared her research study in her PhD program at the DLSU entitled, “Online Homework in Statistics: Strengthening Student Engagement Towards Improved Performance”. Her study was awarded as best research by the DLSU.

The conference also featured 23 posters and 27 oral presentations from the graduates of the CBPSME. Their presentations devoted on subject relating to strategy, curriculum, student performance, K to 12 program, instructional material, problem solving, and education in general. Continuous research in the Science-Mathematics Education area paves the way for the improvement of education system. Conducting researches and sharing their results harness the quality of our SME educators to put their inquiry into action.

DOST and DepEd partnership opens more scholarship opportunities

The constant and rapid transformation in the education system and society as a result of S&T innovations and disruptions calls for the country’s STEM educators to cope by having the time to enhance their knowledge and skills in their respective areas.

This was acknowledged by DOST Secretary Fortunato De la Peña during the signing of the Memorandum of Understanding with his counterpart in the Department of Education, Dr. Leonor Briones. The ceremony solidified a partnership that intends to strengthen collaboration and provision of scholarship opportunities to Science and Mathematics teachers nationwide, enabling them to pursue their MS and PhD degrees through the DOST-SEI Graduate Scholarship Programs. It was held on July 4, 2018 at the SEAMEO Institute in Diliman, Quezon City.

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The partnership addresses the concerns of teacher-applicants and ongoing scholars of the Capacity Building Program in Science and Mathematics Education. DOST-SEI received several reports about the teachers’ inability to gain approval to go on leave of absence (LOA) in order to study full time under the DOST-SEI Scholarship. One of the criteria of eligibility and admission in the scholarship program is that an applicant must be able to study full-time for a period of two years for an MS degree or three years for PhD degree. The applicant must be allowed to take an official LOA and be released from any institutional responsibility for the duration of the scholarship.

With this MOU, DepEd will be responsible in identifying the qualified teachers to go on study leave with pay, thus enabling DOST-SEI to cater to more qualified applicants to the scholarship program.

More universities join the CBPSME Consortium

More applicants from the different parts of the country will be able to avail of the graduate scholarship programs in science and mathematics education as it forged a new cooperation agreement with additional higher education institutions (HEIs) strategically located in Luzon, Visayas, and Mindanao.

Cebu Normal University, Leyte Normal University, MSU-IIT, and St. Mary’s University signed their membership to the National Consortium in Graduate Science and Mathematics Education (NCGSME). These four institutions add to the original members that include ADMU, Bicol University, CLSU, DSLU, Mariano Marcos State University (MMSU), Mindanao State University- Marawi City, Philippine Normal University, University of San Carlos, UI-P Open University (Los Banos), UP College of Education (Diliman, QC), Western Visayas State University (WVSU) and Western Mindanao State University (WMSU).

A Memorandum of Agreement was signed on December 10, 2018 at the PICC in Pasay City between DOST Secretary Fortunato de la Peña and the Presidents of the Higher Education Institutions.

In expanding the scope of the consortium, DOST-SEI hopes to encourage more scholars to pursue higher education in their respective fields of specialization without need to go far from their homes. It will also contribute to the improvement of the quality of Science and Mathematics education in the country.

FOREIGN SCHOLARSHIP PROGRAMS

DOST-SEI scholars earn graduate degrees in Petroleum Engineering in Malaysia

Six DOST-SEI scholars completed their Master of Science in Petroleum Engineering degrees at the Universiti Teknologi Petronas (UTP) in Perak, Malaysia, receiving their diplomas during its 18th Convocation held on 18 November 2018.

The scholar-graduates are faculty members from Palawan State University (PSU) and Batangas State University (BSU)—two among the few universities in the country that offer undergraduate degree in Petroleum Engineering. They have been teaching for the program in the said universities but could not secure tenure since they lacked Master’s degree. At present, no
university in the country offers graduate degree in this program, hence those who intend to take advance degree in Petroleum Engineering had to pursue it abroad.

The PSU and BSU are among the first universities identified under Project STRAND, or the “Science and Technology Regional Alliance of Universities for Inclusive National Development”, which allowed six of its faculty members to become MS scholars in UTP in May 2017. Project STRAND, aims to develop and strengthen the faculty profile of higher education institutions in the provinces, enhancing their abilities to provide quality advanced degrees in STEM subjects.

Two other faculty members of the PSU were likewise sent to UTP to pursue Doctor of Philosophy in Mechanical Engineering with specialization in Energy Systems. These PhD scholars are expected to graduate in 2019, and join the six MS scholar-graduates in the development of graduate degree program in Petroleum Engineering in their respective universities. This will be the country’s first graduate degree program in the said field.

DOST-SEI Foreign Graduate Scholarship Program highlights notable developments

In 2018, 15 applicants were accepted under the DOST-SEI Foreign Graduate S&T Scholarship program. The program is being offered to qualified Filipino citizens who wish to pursue MS or PhD degrees in specialized S&T areas in reputable universities abroad. These areas of study are not being offered yet in any higher education institution in the country.

Table 1 lists the number of foreign scholarship recipients in their respective universities and fields of specialization.

<table>
<thead>
<tr>
<th>Country</th>
<th>Place of Study</th>
<th>Field of Specialization</th>
<th>No. of Recipient/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>University of Cambridge</td>
<td>PhD in Biochemistry Major in Genetics and Molecular Biology</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>University of Manchester</td>
<td>PhD in Electrical and Electronic Engineering</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sheffield Hallam University</td>
<td>PhD in Chemistry (Materials Science)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>University of Kent</td>
<td>Ph.D. in Genetics with specialization in Molecular Biology</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>University College London – Institute of Education</td>
<td>Ph.D. in Bioethics Education</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>University of Sheffield</td>
<td>PhD in Environmental Physiology</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Cranfield University</td>
<td>MS in Manufacturing Technology and Management</td>
<td>1</td>
</tr>
<tr>
<td>Switzerland</td>
<td>ETH Zurich (Swiss Federal Institute of Technology Zurich)</td>
<td>Ph.D. in Earth Science</td>
<td>1</td>
</tr>
<tr>
<td>United States of America</td>
<td>Iowa State University of Sciences and Technology</td>
<td>PhD in Soil Science</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>University of California - Davis</td>
<td>PhD in Agriculture (Postharvest Biotechnology)</td>
<td>1</td>
</tr>
<tr>
<td>Japan</td>
<td>Kyushu Institute of Technology, Japan</td>
<td>Ph.D. in Space Engineering (Aerospace Science Integrated System Engineering)</td>
<td>3</td>
</tr>
<tr>
<td>Belgium</td>
<td>University of Leuven/Radboud University Leuven</td>
<td>Ph.D. in Biocatalysis Engineering</td>
<td>1</td>
</tr>
</tbody>
</table>

Mr. Michael Jason A. Solis
Cranfield University in the United Kingdom
MS in Manufacturing Technology and Management

“The scholarship program enables me to understand how fabrication affects the structure and properties of materials, and apply this knowledge to materials in manufacturing. I also gained critical awareness of the relationship of applied/industrial metrology with manufacturing systems design, analysis and control that will enable students to contribute to the cost-effective manufacture of an aircraft. Moreover, I developed a comprehensive understanding of the interrelationships between design, manufacturing, supply chain and customer facing disciplines and how these can contribute to meeting the challenges of aircraft manufacture.”

Table 1: Number of Scholarship Recipients

Optimistic that with the sustained support of the government in its S&T human resources, the country will be able to produce more globally competitive S&T experts who will work on cutting-edge technologies that address the pressing problems of the country.
MS. KARMINA A. AQUINO
was granted a four-year scholarship to pursue her PhD in Earth Science at the ETH Zurich (Swiss Federal Institute of Technology Zurich) in Zurich, Switzerland. The first semester of her doctoral program includes the participation into the Lost City Expedition, preliminary analyses of samples collected from the cruise, attendance in two lecture classes, and participation in two workshops. She joined the Lost City Expedition in September 2018.

MR. HOWELL HENRIAN G. BAYONA
was granted an 11-month scholarship program in MS Deglutology at the University of Leuven (Katholieke Universiteit Leuven) in Leuven, Belgium. Deglutology is the science of deglutition, and focuses on the care of patients with swallowing and eating problems through every stage of life. A swallowing problem, also called dysphagia, may arise from a wide range of diseases such as prematurity, cerebral palsy, stroke and muscular disease, but it is also typical of the normal ageing process in humans. Deglutologists are health professionals who care for patients with dysphagia across their lifespan.

Relative to the implementation of the DOST Grants-In-Aid (GIA) program, “Development of Philippine Scientific Earth Observation Microsatellite” or the PHL-MICROSAT project, three Filipino engineers -- IZRAEL ZENAR BAUTISTA, MARLOUN P. SEJERA AND MARK ANGELO C. PURIO -- were able to pursue their doctoral studies at the Kyushu Institute of Technology (Kyutech) in Fukuoka, Japan as part of the Bispectral and Infrared Remote Detection Satellite (BIRDS-4) nanosatellite development project. They took the Federal Communications Commission (FCC) Amateur Radio Licensure Examination which is a requirement for ground station operations for the satellite project at the Saga Prefecture, Japan on 8 December 2018. They also attended training sessions and meetings before the BIRDS-4 Satellite Project kick-off as part of the preparation in building the satellite.
Philippine Scholars (Izrael Zenar Bautista, Marloun P. Sejera and Mark Angelo C. Purio) with Nepali and Namibian students during the space weather report presentation as a requirement in the short course.

Prof. Cho Mengu, pressing the kick-off meeting for the Birds-4 satellite project participated in by Philippines, Japan and Paraguay.

Group photo of Birds-4 Cube Satellite Project members and professors.

SEI allocates support to Space Science scholars

The Institute provides local and foreign scholarship support to the DOST program “Space Technology and Applications Mastery Innovation and Advancement (STAMINA4Space)” under the project Space Science and Technology Proliferation through University Partnership (STEP-UP).

The objective is to produce a workforce trained specifically on conducting R&D activities in vital areas of space science, technology and allied fields. This is in line with the eventual establishment of the DOST’s Philippines Space Agency (PhilSA), which will become the central government agency that will oversee national issues and activities related to space science and technology applications.

For the local scholarships, qualified applicants will be pursuing MS in Electrical Engineering focused on space technology development at the Electrical and Electronics Engineering Institute of UP-Diliman. For the foreign scholarship, three students were sent to Kyushu Institute of Technology in Japan for the doctoral degree studies as part of the Bispectral and Infrared Remote Detection Satellite (BIRDS-4) nanosatellite development project.

More local scholars benefit from PCARI Scholarships Project

Enhancing the capacity of local Higher Education Institutions (HEIs) in undertaking world-class research, development and innovation, the Philippine–California Advanced Research Institutes (PCARI) Scholarships Project supported a total of 42 local and four foreign Master’s degree scholars as well as two local and two foreign PhD scholars and one Postdoctoral scholar as of end of December 2018.

The project has two major integral components: human resource development (HRD) and capacity building in research and development, particularly in the areas of information infrastructure development (IID) and health innovation and translation medicine (HITM); and the actual production of new knowledge in these fields.

This approach will not only provide highly trained scientists and researchers but also enable enterprises to be established utilizing the expertise gained through the collaborative activities with California universities.

The DOST-SEI was commissioned by the Commission on Higher Education (CHED) to implement the HRD component of PCARI.

One local PhD scholar has undertaken the required Sandwich Program at the University of California Merced, 11 local MS scholars at UC Berkeley and UC Marcei. Four local MS scholars are currently undertaking their Sandwich Program at UC Berkeley and UC San Francisco. Two local MS degree scholars, one foreign MS degree scholar, and one Postdoctoral scholar graduated in 2018.
ASTHRDP-NSC Graduate Scholars Conference tackles topic on Big Data

On its 7th year of conducting the ASTHRDP-NSC Graduate Scholars Conference, DOST-SEI discussed “Big Data for Big Science” emphasizing the recent trend of large data sets being analyzed to reveal patterns, trends, and associations, relating to human behavior and interactions that are helpful in decision-making for inclusive development especially in the field of S&T.

Held on June 18-19, 2018 at the PICC in Pasay City, the two-day conference featured plenary talks with experts, as well as parallel oral and poster presentations featuring the scholars’ researches. About 500 participants attended the event.

Throughout the Conference, DOST-SEI urged its scholar-graduates to continue their engagement in research activities and collaborations to further develop the Philippine science community.

The first talk titled “Bridging Theory & Practice through AI and Complexity Science” was delivered by Dr. Christopher P. Monterola, Professor, Analytics, Information, and Operations Department, Asian Institute of Management.

The second talk titled “Big Data: Applications and Challenges in Science”, was delivered by Dr. Andrei D. Coronel of the Department of Information Systems and Computer Science, Ateneo de Manila University.

Dr. Juan M. Pulhin, Professor, College of Forestry and Natural Resources, University of the Philippines Los Baños shared the next topic on “Big Data and Climate Change: Implications to Graduate Research.”

The last plenary talk was delivered by Dr. Alvin B. Marcelo, Director, Technology Transfer and Business Development Office (TTBDO), University of the Philippines Manila. His talk was entitled “Governance and Architecture: Seatbelts as we travel at the speed of data.”

Each talk was followed by an open forum.

Dr. Fabian M. Dayrit, Chair, ASTHRDP-NSC Steering Council and ASTHRDP-NSC Project Leader, Ateneo de Manila University presented a brief history of the Science Consortium and reported on the following ASTHRDP-NSC Initiatives: Annual Scholars’ Conference; Student Research Support Fund; Internal Mobility Fund; Interdisciplinary Programs; and Improved on-time graduation rate.
Nine scholars (three per category) won in the Best Poster Competition and were awarded cash prizes and certificates:

- **Agriculture/Fisheries**
  - Environmental Science Category 1:
    - 1st Place — Ms. Anne Brigette Ledesma (UPV)
    - 2nd Place — Mr. Nic Oswald Borines (UPLB)
    - 3rd Place — Ms. Ruby Abao (UPLB)

- **Biology/Health Science/Food Science/Chemistry/Natural Products** Category 2:
  - 1st Place — Mr. Darwin Reyes (ADMU),
  - 2nd Place — Ms. Michaela Olisha S. Lobregas (DLSU),
  - 3rd Place — Ms. Remilyn Mendoza (UPLB)

- **Mathematics/Statistics/Physics** Category 3:
  - 1st Place — Mr. Daniel Marquez (UPD)
  - 2nd Place — Mr. Prince Allan Pelayo (UPD)
  - 3rd Place — Ms. Merry Jane Ortillo (UST)

Scholars reap benefits of foreign collaborations

Throughout 2018, the ASTHRDP-NSC conducted the following activities in collaboration with foreign educational institutions for the benefit of its scholars:

- Student Research Support Fund (SRSF)
  - The SRSF refers to fund extended to graduate scholars to assist them in conducting research, dissemination of research outputs such as participation in scientific meetings/forums/conference, poster presentation, publication in scientific journal (local and international), as well as payment for research adviser’s/mentor’s fee under a Contract of Service to be released only upon completion of the thesis/dissertation of the scholar.

- **Research Enrichment Program**
  - The grant is given to DOST scholars in the MS and PhD programs who have an approved research proposal and/or have completed their academic courses in any of the DOST identified local universities and intend to conduct their research work in a foreign university identified by/or acceptable to DOST. There were 8 MS and 18 PhD ASTHRDP scholars granted REP in 2018 to do part of their research abroad.

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"MY GRADUATE STUDY EXPERIENCE IN THE UNIVERSITY OF THE PHILIPPINES VISAYAS IS AMAZING. I LEARNED A LOT FROM MY MENTORS AND WE CREATED NEW KNOWLEDGE THROUGH OUR RESEARCHES. HOWEVER, THE BIGGEST OBLIGATION IS TO DISSEMINATE THAT KNOWLEDGE TO A WIDER SCIENTIFIC COMMUNITY OUTSIDE THE CAMPUS. THROUGH DOST-SEI-SRSF, I WAS ABLE TO SHARE OUR RESEARCH IN LOCAL AND INTERNATIONAL CONFERENCE WITHOUT EVEN BOTHERING ABOUT THE EXPENSES."

— ADZIEL ADRIAN BALDEVIESO

MS Fisheries scholar at UPV
I was granted a research enrichment conducting research at the National Center for Atmospheric Research (NCAR) under DOST-ASTHRDP. The research conducted in the said institution focused on the potential impact of urbanization on local climate. The research used Weather Research Forecasting (WRF) model, which is developed by NCAR.

— MS. ALYSSA VALERIO
MS Environmental Science scholar at the ADMU

As scholars, we look for opportunities to expand our skills and learn from the best in our field. The MECO-TECO sandwich scholarship program (SSP) has provided us just that. We were placed under the guidance and mentorship of distinguished professor Wei-Hsin Chen under the Green Energy and Fuel (GENFUEL) laboratory. The laboratory claiming the title of the top torrefaction research lab in the world. We are lucky to observe and work under a topnotch mentor and get exposed to a rigorous and robust research process. Among other things, we have made close connections with a diverse group of scientists and researchers through this program.

— EMMANUEL ARRIOLA AND GABRIEL GARCIA
National Cheng Kung University (NCKU) Green Energy and Fuel Laboratory (GENFUEL)
MR. RALPH RUSSEL SYJUECO, 2018 MECO-TECO SSP RECIPIENT, CONDUCTING MAINTENANCE CULTURE OF A REGIONAL CELL LINE USED AS IN VITRO MODELS FOR PROTEIN AGGREGATION ASSOCIATED WITH NEURODEGENERATIVE DISEASES IN THE ANIMAL CELL CULTURE ROOM OF THE INSTITUTE OF CHEMISTRY, ACADEMIA SINICA.

Visiting Professor (ASTHRDP)

One of the components of the DOST graduate scholarship is the invitation of a Visiting Professor/Fellow. It aims to further strengthen the academic and research programs of the MS and Ph.D. scholars especially in areas where the DOST graduate scholarship partner institutions need complementary expertise in a specific field of study.

In 2018, two (2) international experts, namely Dr. Bart Braeckman and Dr. Ludwig Streit, were invited as Visiting Professors by the Mindanao State University-Iligan Institute of Technology.

Dr. Bart P. Braeckman of the Department of Biology, Faculty of Sciences, Ghent University, Ghent, Belgium, was invited by the Department of Biological Sciences of the Mindanao State University - Iligan Institute of Technology through the Visiting Professor component of the ASTHRDP. To
handle short course for graduate students and likewise conduct a seminar on ‘Aging: Lessons from a Tiny Worm’ from August 1-12, 2018. The said activity allows faculty members and graduate students to cooperate with prominent academics from other foreign institutions. The short course (Bio 281) started on August 2, 2018 with 24 MSc participating students.

**ERDT HRDP tracks faculty scholarship gains**

The Human Resource Development Program of the ERDT marked its own roster of accomplishments with the goal of contributing to the growth in the number of RSEs in the country.

In 2018, ERDT has taken in a total of 12 Sandwich Program grantees, scholars conducting research for their dissertation in a recognized research institution abroad. For its faculty development programs, ERDT has granted two faculty members with foreign PhD scholarship, 67 faculty members with Faculty Research Dissemination Grant and five faculty members with Faculty Research Grant (4 MS, 1 PhD). ERDT also hosted 10 visiting professors for 2018. (See Table 2)

**ERDT team conducts year-end performance review**

To identify the challenges in the course of performing their duties, and conduct strategies for improvement in the rendition of service, the ERDT conducted a Year-End Review and Events Planning Activity for the project staff, held on October 10-12, 2018 in Baras, Rizal.

The event was attended by the Science Research Specialists of ERDT Consortium Universities, led by UP Diliman Project Leader Dr. Menandro Berana, with Ms. Saira Algura and Mr. Lawrence España of DOST-SEI.

A series of round table discussions covered the following topics: Local Graduate Scholarship, Foreign PhD, Sandwich Program, Visiting Professors Program, Research Grant, Faculty Research and Dissemination Grant, Budget Preparation and Processing, Inventory of Supplies and Equipment, Transfer of Equipment for SUCs and PLUs, ERDT Events, and Promotions and Marketing Strategies in order to increase ERDT’s audience reach.

The discussions also centered on the observations of the participants on the day-to-day operations of the program. They shared the challenges that they encountered in performing their tasks and in dealing with the requirements of other Offices and identified strategies on how these challenges should be dealt with.

**DOST-SEI pilot tests scholarship review items**

While highly urbanized regions have the most turnout of scholarship qualifiers annually, 84 municipalities in 11 regions do not have qualifiers. This prompted the Institute to develop an intervention program to prepare their graduating Grade 12 Senior High School students to the examination and increase their chances of qualifying.

In 2017, item writers and domain experts commissioned by DOST-SEI produced 518 items which were pilot tested in 2018 to 16 randomly selected schools nationwide. This aimed to determine possible shortcomings in instruction, time limits, as well as unclear, ambiguous and complicated items. Based on the outcome of the pilot testing, the items would then be revised, analyzed, consolidated, formatted and printed for use by the reviewers and mentors prior to the next round of DOST-SEI Undergraduate Scholarship Examination.
DOST endorses applicants for S&T Eligibility Specialists

In order to encourage more S&T professionals to get into public service and contribute to the advancement of the country’s thrusts for research and innovation, PD No. 997 allows for the conferment of Civil Service Eligibility to a scientific or technological specialist who gained his knowledge through advanced education and sharpened by research and teaching experiences.

In 2018, the DOST Secretary approved and endorsed a total of 30 applicants to the Civil Service Commission (CSC) Central and Regional offices for their grant of S&T Eligibility Specialists. The applicants were evaluated by the Technical Working Group and Presidential Committee on the bases of their qualifications and the requirements of public service. Table 3 shows the number of qualified applicants by S&T fields.

### Table 3: Number of Qualified Applicants by S&T Fields: PD No.997, 2018

<table>
<thead>
<tr>
<th>Science and Technology (S&amp;T) Fields</th>
<th>Sex</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctorate Degree</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PhD in Biology</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Biological Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master in Biology</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics and Information Technology</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Master in Information Technology</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Teaching Experience</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Research Experience</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

HRDP champions SEI employee learning

In order to develop the core capacities, values and intra-/inter-relations of DOST-SEI’s human resources and enhance the Institute’s delivery of services in administering scholarships, promoting S&T culture, and innovating science education, the Human Resource Development Program (HRDP) conducts Learning & Development initiatives and provides scholarship support for employees.

### Learning & Development

In 2018, a total of 28 external L&D activities were provided and five in-house trainings were conducted and facilitated as shown in Table 4. The activities benefited 49 out of 50 permanent employees of SEI. All of these L&D activities aim to continually capacitate and strengthen the human resource capabilities of SEI personnel.

Likewise, in order to adopt a quality system and shift its Human Resource processes into a Strategic HR Systems/Processes, the HRMU in partnership with Civil Service Institute conducted an in-house training program on Competency-Based Human Resource System. This program has four modules and was attended by 41 officials and employees, representing the Office of the Director, Finance and Administrative Division, S&T Scholarship Division, S&T Manpower Education Research and Promotions Division and Science Education and Innovations Division. (See Table 5)
Scholarship Support

Under the SEI Human Resource Development Program (HRDP), three employees are enrolled in graduate courses. (See Table 6)

DOST HRDP Graduate Degree Scholars gain in numbers

The Institute implements the degree component of the Department of Science and Technology-Human Resource Development Program (DOST-HRDP), which awards scholarships to the department’s deserving officials and employees. The program includes Local Scholarships, Foreign Scholarships, Incentives for Self-Financed Graduates, Bar Review Grant, Sandwich Program, and Student Research Support. (See Figure 3)

Local Scholarships

From 2014 to 2017, the program supported an average number of only 110 scholars. In 2018, the program gained the highest number of scholars supported at 98 Master’s and 52 Doctorate. (See Table 7)

The significant increase in the number of scholars is attributed to the implementation of the customized Master in Public Management Technology-based Enterprise Development (MMP-TED) delivered by the Ateneo de Manila University for the administrative staff of the DOST. The program aims to improve the competencies of the DOST non-technical employees in addressing issues and concerns related to organizational performance and quality of services being provided by their respective agencies.

Foreign Scholarship Program

In 2018, the DOST-HRDP supported the pursuance of graduate studies of four MS and four PhD scholars in France, Hungary, Japan, Thailand and Taiwan. The Foreign Graduate Degree Assistance is granted to selected DOST employees subject to the availability of counterpart funding from external sources and to the requirements of the DOST and the sponsoring agency. (See Table 8)

Self-financed Graduate Degree

DOST employees, who during their employment at DOST, were able to obtain their advanced degrees as self-financed students were granted certificates of merit plus cash incentives amounting to P60,000 to P120,000 for Doctorate and

P40,000 to P80,000 for Master’s. In 2018, DOST-HRDP, awarded the said grant to five Master’s and two Doctorate self-financed DOST employees. (See Table 9)

Sandwich Program

Mr. Rondal P. Parreño Jr., an employee of the Industrial Technology Development Institute and a PhD Chemical Engineering student at the De La Salle University, was awarded the DOST- HRDP Sandwich Program. This would aid him in the completion of his dissertation titled, “Development and Design of Electrospun Proton-Conducting Membrane for Proton Exchange Membrane Fuel Cell (PEMFC)” at the National Tsing Hua University, Taiwan, PRC.
TO BE A SCHOLAR WHILE WORKING FULL-TIME AT DOST IS VERY HUMBLING. BY GOD’S GRACE AND WITH DOST’S FULL SUPPORT, I FINISHED STRONG AND ALSO RECEIVED RECOGNITION AS AN ELECTED MEMBER OF THE PI GAMMA MU HONOR SOCIETY AND THE PHI KAPPA PHI HONOR SOCIETY. TODAY, I AM EMPOWERED TO BETTER SERVE THE DOST AND OUR BELOVED COUNTRY, THE PHILIPPINES. TO MY FELLOW AND FUTURE SCHOLARS, I DARESAY, NEVER GIVE UP IN YOUR QUEST FOR EXCELLENCE. OUR COUNTRY NEEDS YOU.

THE COMPLETION OF MY PHD DEGREE HAS BEEN THE MOST CHALLENGING JOURNEY IN MY ENTIRE EXISTENCE. I COULD NOT HAVE SUCCEEDED WITHOUT THE INVALUABLE FINANCIAL SUPPORT OF THE DOST-HRDP SCHOLARSHIP. I AM FOREVER GRATEFUL TO THE TOP MANAGEMENT OF DOST FOR APPROVING MY STUDY LEAVE WITH PAY FOR 10 MONTHS AND FOR GIVING ME THE SAID SCHOLARSHIP FOR 2 YEARS WHICH HAD GREATLY AIDED ME IN COMPLETING MY PHD DEGREE ON TIME — A RARE FEAT IN UP.

The Sandwich Program is open to any DOST-HRDP scholar in the MS and PhD level who have completed the academic courses in any of the DOST identified local universities and have approved research proposals that partly need to be conducted in foreign universities due to limited local resources, e.g., equipment, expertise, funds and supplies.

Student Research Support

Two scholars were awarded the Dissemination Grant, a component of the Student Research Support provided to DOST-HRDP scholars whose thesis or dissertation has been accepted for oral or poster presentation in a local or international conference for publication in a refereed technical journal.

Mr. Christopher G. Millena of the DOST Regional Office No. V presented his research output at the “21st World Congress on Nutrition & Food Science” on July 9-10, 2018 in Sydney, Australia while Ms. Mary Joy P. Paico of ITDI presented her research output at the “21st IAPRI World Conference on Packaging” on June 19-22, 2018 in Zhuhai, China.
In a century that fundamentally connects the physical with digital, therefore potentially losing millions of jobs to automation and artificial intelligence, revolutionized teaching methods and deliberately customized approaches to learning are some of the key factors that will help our nation keep up with global frameworks and fully benefit from these new groundbreaking technologies.

More collaborations across various sectors and industries—both local and international—are needed to upskill educators and push them to become pacesetters who are able to instill creativity and critical thinking among learners. This facilitates a more proficient, digitally literate learning culture wherein future-ready, in-depth experiences are substantially provided to students. As our country endeavors to simultaneously progress with new digital breakthroughs, current technology-intensive research undertakings paired with transformational educational techniques and curricular reforms firmly rooted on Science, Technology, Engineering, and Mathematics (STEM) ensure a more prepared and dynamic education system that will move us to a better economic standpoint.
These strategies are targeted at elevating the quality of our educational institutions, promoting creativity and critical thinking as opposed to limited, routine approaches. They help STEM educators go beyond conventional teaching and keep up with global frameworks, enabling them to facilitate a more competent learning culture that will allow Filipinos to acquire specific, relevant skills that meet the demands of the future.

More STEM teachers benefit from Project STAR trainings

The Science Teacher Academy for the Regions or Project STAR is a capacity-building activity that aims to improve the professional development of STEM teachers all over the country. Through its coalition of sixteen partner universities in various regions, it regularly provides specialized trainings for in-service and pre-service teachers, promotes new strategies and models of teaching and learning science and mathematics, and establishes collaborative activities.

Having expanded its number of partner universities in 2017, the program was able to increase the number of innovative trainings it conducts and the number of their teacher-beneficiaries, as shown in Table 10.

The activities are carried out through the partnership with sixteen universities with which SEI has a standing Memorandum of Agreement until 2020, and with the strong support of the regional offices of the Department of Education (DepEd). (See Table 10)

<table>
<thead>
<tr>
<th>Date</th>
<th>Title of Training</th>
<th>Venue</th>
<th>No. of Beneficiaries/Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 14-15</td>
<td>Science and Math Teachers as Peacebuilders (Training of Trainers)</td>
<td>MNSU-IT (Region 10)</td>
<td>10 faculty members of MNSU-Alabawi</td>
</tr>
<tr>
<td>Feb 20-22</td>
<td>Inquiry-based approach for teaching science</td>
<td>Palacio de la Raza, Zamboanga City (Region 9)</td>
<td>52 science teachers</td>
</tr>
<tr>
<td>March 5-7</td>
<td>Teaching Mathematics Through Problem-solving</td>
<td>PMU (Region 10)</td>
<td>59 math teachers</td>
</tr>
<tr>
<td>March 15-15</td>
<td>Science and Math Teachers as Peacebuilders (Teacher Training)</td>
<td>Crystal Field Hotel City (Region 10)</td>
<td>64 science and math teachers</td>
</tr>
<tr>
<td>March 15-16</td>
<td>Teaching Mathematics Through Problem-solving</td>
<td>St. Mary’s University (Region 2)</td>
<td>59 math teachers</td>
</tr>
<tr>
<td>April 17-19</td>
<td>Teaching Mathematics Through Problem-solving</td>
<td>Dep Ed Eastern Center (Region 7)</td>
<td>57 math teachers</td>
</tr>
<tr>
<td>April 24-26</td>
<td>Teaching Mathematics Through Problem-solving</td>
<td>Palawan State University (Region 4B)</td>
<td>62 math teachers</td>
</tr>
<tr>
<td>April 26-28</td>
<td>Language Strategies for Teaching S&amp;M</td>
<td>Grand Dove Hotel (Region 6)</td>
<td>16 chin teachers</td>
</tr>
<tr>
<td>May 9-11</td>
<td>Language Strategies for Teaching S&amp;M</td>
<td>CPAU-Cagayan de Oro (Region 10)</td>
<td>89 math teachers</td>
</tr>
<tr>
<td>July 7-9</td>
<td>Language Strategies for Teaching S&amp;M</td>
<td>PMU (Region 10)</td>
<td>52 math teachers</td>
</tr>
<tr>
<td>August 1-3</td>
<td>Language Strategies for Teaching S&amp;M</td>
<td>Grand Eagle (Region 7)</td>
<td>101 math teachers</td>
</tr>
<tr>
<td>August 7-9</td>
<td>Language Strategies for Teaching S&amp;M</td>
<td>British University (Region 5)</td>
<td>101 math teachers</td>
</tr>
<tr>
<td>August 14-16</td>
<td>Language Strategies for Teaching S&amp;M</td>
<td>CSU (Region 1)</td>
<td>101 math teachers</td>
</tr>
<tr>
<td>October 2-4</td>
<td>Training of Trainers</td>
<td>Pearl Hotel Manila</td>
<td>73 Faculty members of 30 partner universities and DipEd Program Supervisors</td>
</tr>
<tr>
<td>November 10-11, 2018</td>
<td>Training of Trainers &quot;Engineering Design Process for Educators&quot;</td>
<td>City Garden Nuvali</td>
<td>38 Faculty members of 6 partner universities and DipEd Program Supervisors</td>
</tr>
</tbody>
</table>

Search for Brightest STAR launched

Participants of STAR trainings from 2014-2017 coming from Regions 1, 3, 5, NCR, 6 and 10 qualified for a competition for the best STAR teacher. The criteria include having the initiative to use their training to make their classrooms, schools and the teaching community places of innovation and positive change.

Nominations started coming in March 2018 from school, division, regional and national levels. Twelve finalists competed in the national level where they underwent teaching competition and interviews. Finally, two brightest STARS emerged: for Science, Ms. Mary Grace Bumanlag, of Pres. Diosdado Macapagal High School, Taguig City National Capital Region; and for Math, Ms. Geylen Abainza of Marci Rhulah Memorial School, Albay, Region 5. The awarding ceremony, graced by DOST Secretary Fortunato T. De La Peña, and DepEd Secretary Leonor M. Briones, was held at the PICC on November 9, 2018.
Trainors trained on Engineering Design Process (EDP)

In cooperation with UNILAB Foundation and the UP College of Education, a training was conducted that aimed to build and sustain the capacity of STEM teachers by relating 21st century competencies and literacies to STEM learning. These focused on a problem solving approach wherein the participants were tasked to identify a specific community or industry problem and generate solutions to it.

The training was attended by 38 STAR trainors from Regions 1, 3, 5, NCR, 6 and 10. It was conducted by a team of UP professors—Dr. Sheryl Lyn Monterola, Dr. Edwehna Paderna, Dr. Rosanelia Yangco and Dr. Nympha Joaquin—and was held from November 10-11, 2018 at the City Garden Suites Manila.

STAR Trainings evaluated for effectiveness

A study was conducted to determine the effectiveness of STAR Trainings on improving the teaching capabilities of participants in the six pioneer regions -- Regions 1, 3, 5, NCR, 6 and 10.

The results were positive as it was determined that STAR trainees were able to adapt well the content and skills into their teaching practice. Their teaching techniques exhibited a great transformation from traditional method to inquiry-based method of teaching in which they applied contextualization thereby enabling students to become more engaged in every lesson. The STAR trainings also made a great impact on the professional growth of the STAR trainees by giving them an opportunity to become speakers in their respective school/district/division level about the content and skills that they have learned from the STAR trainings.

**e-STAR website updated and improved**

The e-STAR, or the online platform for Project STAR at www.e-star.ph, was updated and revised. With training outputs like lesson exemplars and sample activities regularly uploaded, this facility provides teachers with increased access to learning resources to improve their teaching and learning of science and mathematics, and encourages collaboration among them. The site also serves as venue to disseminate information about the services and activities of Project STAR to a bigger population.

The online training facility is administered in-house by DOST-SEI staff who underwent training in web and content administration.

Teachers in two provinces in Bicol train in Geology and Disaster Risk Management

To enhance their capacity to teach earth science along with disaster risk reduction, senior high school teachers participated in a four-day Geology-DRR Training conducted in Camarines Sur on November 14-17 and Sorsogon on November 21-24, 2018. Each of these provinces has its own unique geographic features and disaster vulnerability, making the training more contextualized and meaningful for the attendees.

Held in partnership with Bicol University, the training consisted of three-day lectures that culminated in a field trip to specific sites in these provinces. It was attended by 80 senior high school teachers, 40 from each province.

The lectures provided the participants with a better understanding of basic geology concepts as well as knowledge of geological resources and geohazards in the Bicol region and its provinces, which are among the most disaster prone sites in Luzon. Scenario-based illustrations provided meaningful issues for discussion, and innovative strategies in teaching earth science and disaster risk reduction were introduced to the teachers, along with an orientation on the sites to be visited before the field trip.

The participants underwent pre-assessment to determine baseline information on their content knowledge and level of confidence to teach the subject, and post-assessment to determine the level of knowledge they gained.

**Training evaluation reveals positive results**

Teachers were requested to fill-out daily logs where they wrote their insights and knowledge gained from the sessions. Everyone gave positive feedback on both trainings.
The participants found each of the learning sessions -- which covered the basics of Earth systems and structures, Geohazards and Hazard Mapping, disaster risk management, geology and teaching strategies for these subjects -- to be highly relevant and effective. They also held in high regard the effectiveness of the resource persons and facilitators, as well as the visual aids provided. The high marks they gave for the logistics and assistance provided by SEI staff capped off a success evaluation result.

The training was conducted in collaboration with UP Diliman-College of Education faculty members, Dr. Fe Josefa Nava and Dr. Marlon Ebaeguin. It was held on April 18-20, 2018 in Quezon City.

INCLUSIVE LEARNING PROGRAMS
Teachers of visually impaired students receive enhancement training

DOST-SEI continued its commitment to Republic Act 7277 or the Magna Carta for Disabled Persons, by giving adequate access to quality education and ample opportunities to develop the skills of persons with disability. A three-day training for elementary and high school science teachers who have students with low vision and visual impairment was held in cooperation with the Resources for the Blind, Inc. (RBI) and the Department of Education. The training covered effective teaching strategies, including the use of assistive devices in science activities.

A total of 31 non-SPED science teachers in Mindanao, as well as six visually impaired students and their guardians / parents from Davao City attended the training on May 22-24, 2018 at the Apo View Hotel, Davao City. RBI identified the participants who were teaching or would be teaching visually impaired students from selected schools in Mindanao. The DepEd regional offices then issued a Memorandum authorizing the teachers’ attendance.

For their output, the participants developed five science lessons that included the use of assistive devices. They also designed five tactile materials for the lesson on Integumentary System to make the lesson more “visible” to learners, thus increasing their participation in class.
Senior citizens enjoy spotlight on learning practical science

Senior citizens likewise continued to benefit from an ongoing science camp conducted by DOST-SEI in support of Republic Act No. 9994 or the Expanded Senior Citizen Act of 2010 that works for the improvement of their well-being and their full participation in society.

A total of 103 senior citizens and 19 volunteers from Taguig City and Quezon City attended a science camp with activities that included lectures, demonstrations and hands-on activities on health care, effective response during emergencies, arts and crafts for livelihood, and other topics that presented the connection of science in their everyday lives.

The science camp was conducted in three venues as shown in Table 12.

Some of the activities included a demonstration on how vaccines work, inflating a balloon, creating a lava lamp or household decorations that use vinegar as basic material. Participants were also taught to make Christmas decors using recyclable materials, a potential source of income.

The elderly were also guided in doing simple science activities on the topic, “Acids and Bases”. Technical personnel from Food and Nutrition Research Institute (FNRI) and Philippine Institute of Volcanology and Seismology (PHIVOLCS) served as resource persons on the topics, “Importance of Healthy Eating and Wellness” and “Disaster Preparedness”, respectively.

The enthusiasm of the participants encouraged the Institute to develop and conduct a seminar/training for science and mathematics teachers nearing their retirement age (57-59 years old.)

Table 12: Science Camp for Senior Citizens

<table>
<thead>
<tr>
<th>Date</th>
<th>Beneficiary</th>
<th>Participants</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 17, 2018</td>
<td>District II Barangays of Taguig City</td>
<td>9 Male, 18 Female</td>
<td>27</td>
</tr>
<tr>
<td>October 2, 2018</td>
<td>Teresa Charities for the Elderly</td>
<td>4 Male, 48 Female</td>
<td>52</td>
</tr>
<tr>
<td>October 10, 2018</td>
<td>Golden Reception and Action Center for the Elderly and Other Special Cases</td>
<td>20 Male, 23 Female</td>
<td>43</td>
</tr>
</tbody>
</table>

Training equips JLSS scholar-graduates with pedagogical skills

Junior Level Science Scholarship (JLSS) graduates who did not major in education but are already teaching science and mathematics as part of their return service agreement participated in a three-day training workshop designed to help them become more effective STEM teachers.

The workshop consisted of a series of lectures and demonstrations on lesson planning, innovative teaching strategies, and effective classroom management. A total of 42 JLSS scholar-graduates of 2017 from Region III attended the training that was held from August 31 to September 2, 2018 in Quezon City.
The following experts from the UP College of Education and Integrated School served as trainers/resource persons:
- Dr. Maria Vanessa Lusung-Oyzon
- Dr. Sheryl Lyn C. Montoroña
- Dr. Edwehra Elinore S. Paderna
- Dr. Nympha B. Joaquin
- Ms. Lady Angela M. Rocena

The topics and activities included Educational Psychology and Classroom Management, Fostering and Assessing 21st Century Competencies in Science and Mathematics, Lesson Modelling (5E’s), Lesson Plan Writing/Development, and Demonstration Teaching.

Scholar Graduates perform Hands-on activities and present the lessons they prepared during the workshop.

A Night of Camaraderie and Fun: Scholar-Graduates enjoy the games during the Fellowship Night.
Training equips science teachers to teach beyond their majors

Similarly, in line with continuous pedagogical skills enhancement, DOST-SEI continued with the conduct of a training for non-major science teachers. The training was born out of the need to equip teachers with knowledge on subjects other than their majors to address the spiral progression of topics per grade level due to the implementation of the K to 12 curriculum.

The project marked two phases of accomplishments:

Phase I: Module Development. Five modules in Physics were developed on the topics Force and Motion, Work and Energy, Heat and Temperature, Electricity, Sounds, and Light.

Phase II: Conduct of Training. Forty-eight non-Physics major teachers from Region V who are actually handling Grade 8 Physical Science classes received training.

The training was conducted on October 18-21, 2018 in Legazpi City. Based on enthusiastic feedback from the participants, the training inspired the non-Physics majors to teach Physics in their respective classes. The project will be continued in 2019 for teachers in Mindanao.

Teachers indigenized science lessons for IP learners

Teachers in elementary schools in Tarlac (San Martin Elementary School and Bungo Elementary School) and Pampanga (Katutubo Village Elementary School Camias Resettlement Elementary School and Villa Maria Integrated School) participated in a training workshop aimed to enhance their knowledge and skills at developing suitable learning materials in science that are culture-based and relevant to their predominantly indigenous pupils.

This ongoing project is conducted with the consent and guidance of community elders and resource persons. Teachers learn about indigenous knowledge, skills and
practices, indigenization of science lessons and teaching methods.

The training-workshop was conducted on April 23-27, 2018 in San Fernando City, Pampanga, and was attended by 30 participants that included IP elders, DepEd personnel and resource persons.

Eighteen indigenized lesson plans in science for Grades 3-6 were refined and forwarded to DepEd Region 3 for Quality Assurance, after which they would be compiled and distributed for use by the teachers in the beneficiary schools.

A similar activity was held in Tarlac on October 23-26, 2018, this time to develop new sets of indigenized science lesson plans for Grades 3-6. It yielded 27 lesson plans that are currently undergoing review before being forwarded to DepEd Region 3 for Quality Assurance, finalization, validation and field testing.

Small private school teachers benefit from pedagogy training

A new initiative by the Institute aims to provide teachers from small private schools equitable access to government service in the area of education, upgrade their teaching skills, and enhance their mastery of science and mathematics subjects.

A total of 55 mathematics teachers in Grades 4-5, coming from 31 small private schools in NCR, underwent a three-day training that emphasized content and unconventional teaching strategies. (See Table 13)

With the theme, Teaching Mathematics through Problem Solving, the training was conducted in two batches: August 14-16, 2018 and September 18-20, 2018, both held at the Philippine Normal University (PNU) in Manila.

Activities included presentation of topic/lecture, discussion, lesson modelling/sample teaching, and lesson development and implementation. The training design was adopted from Project STAR.

Table 13: Pedagogy Training for Grade 4-5 Mathematics Teachers

<table>
<thead>
<tr>
<th>Batch &amp; Training Date</th>
<th>No. of schools benefited</th>
<th>Participants</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch 1: Aug. 14-16, 2018</td>
<td>14</td>
<td>7 18 25</td>
<td></td>
</tr>
<tr>
<td>Batch 2: Sept. 18-20, 2018</td>
<td>17</td>
<td>14 16 30</td>
<td></td>
</tr>
</tbody>
</table>

Faculty members of PNU and MSU-Iligan Institute served as trainers/resource persons:

- Dr. Gladys C. Nivera
- Atty. Antonio V. Ferrer
- Prof. Edward B. Macagne
- Ms. Joan Rose T. Luib

**DOST-SEI trains ALS mobile teachers**

In support of the implementation of the Alternative Learning System (ALS) Program of the Department of Education as an effective mode to reach out of school youths and adults, DOST-SEI held a two-day training-workshop for ALS mobile teachers and learning facilitators. This activity aimed to assist them in developing lessons that address the hierarchical competencies under the ALS Learning Strand 2 (Scientific Literacy and Critical Thinking Skills).

The Institute invited 20 mobile teachers and learning facilitators from DepEd Division of Taguig and Pateros to participate in the training. They are assigned to ALS based in the schools, in the community and other institutions, e.g. Bahay Pag-asa.

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The Institute invited 20 mobile teachers and learning facilitators from DepEd Division of Taguig and Pateros to participate in the training. They are assigned to ALS based in the schools, in the community and other institutions, e.g. Bahay Pag-asa.

The training was held on November 21-22, 2018 at the University Hotel in UP Diliman, Quezon City. With the theme, “Bridging Science and Multi-Literacy”, the training discussed inquiry-based science process that covered topics on Health, Biology, Chemistry, Physics, and Earth Science, including disaster risk reduction and management.

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The “graduates” of the training-workshop, together with the trainer/resource person and SEI project team.
The 21st century classroom is one that exposes students to more insightful, interactive approaches—from involvement in mentoring projects to the application of analytical, problem-solving techniques. For the country to take full advantage of opportunities presented by new developments in science, technology, and innovation, it is necessary to establish an enhanced educational landscape that promotes constructive, self-paced learning within schools and beyond.

In the Philippines, more and more educational institutions are being equipped with facilities for connectivity and mobility in the nation’s bid to design collaborative, student-centered learning environments. The onset of digital trends such as virtual and augmented realities have also paved the way for advanced academic practices, gradually cultivating the skills of tomorrow and thus preparing Filipino learners for a new world that requires new literacies and profound social intelligence.
DOST Courseware Mobile Applications (DOST CMAPP) widens platform, adopts emerging technologies

DOST CMApp, a collection of mobile technology and other related applications produced by the Science Education Institute which mainly features the DOST Courseware in Science and Mathematics, made significant strides in 2018 to widen both its platform base as well as its audience reach. Recent private sector partnerships also highlight the important role that industry plays in enhancing the application with advanced technologies.

DOST CMAPP Reaches Off-Grid Schools Through Smart Communications

Smart Communications, Inc. forged a partnership with the Institute to make its DOST Courseware accessible to more Filipino students nationwide. The Memorandum of Agreement (MOA) signing was held on August 1, 2018 at SEI, enabling the DOST Courseware app to be pre-installed on the tablets and laptops included in every Smart School-in-a-Bag package that will find its way to students and teachers of some thirty-two (32) of the most remote schools in the country. These are located in Tawi-Tawi, Lanao del Sur, Lanao del Norte, Maguindanao, Davao, Cebu, Capiz, Iloilo, Guimaras, Nueva Vizcaya, Cagayan, La Union and Benguet. Smart and SEI are committed to helping enhance the quality of education in schools by making digital learning tools and resources available in classrooms across the archipelago.

More modules made available on Google Play

Further enriching the available learning resources in Google Play, 20 more modules in Grade 7 & 8 Science and Mathematics were developed to add to the first batch of 20 others and 60 modules on Grades 1-6 Mathematics. There are now 100 modules of the DOST Courseware that can be downloaded for free and installed in Android-based devices.

Table 14 shows the number of installs by Grade Level and Subject.

Table 14: Number of Installs by Grade Level and Subject

<table>
<thead>
<tr>
<th>Grade/Subject</th>
<th>No. of Installs 2018</th>
<th>No. of Installs (Lifetime since 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 7 - Science</td>
<td>2,411</td>
<td>4,072</td>
</tr>
<tr>
<td>Grade 7 – Mathematics</td>
<td>2,519</td>
<td>4,119</td>
</tr>
<tr>
<td>Grade 8 - Science</td>
<td>2,476</td>
<td>5,764</td>
</tr>
<tr>
<td>Grade 8 – Mathematics</td>
<td>2,680</td>
<td>5,016</td>
</tr>
<tr>
<td>Grade 1-6 Mathematics</td>
<td>14,862</td>
<td>17,592</td>
</tr>
<tr>
<td>Total</td>
<td>24,948</td>
<td>36,603</td>
</tr>
</tbody>
</table>

Strategic Intervention Material for Teaching Augmented Reality (SIMaTAR) pilot tested

SIMaTAR is a collection of teaching and learning materials in Science Grade 8 using augmented reality technology to produce information, increase knowledge, explore new spaces and places and greatly improve experience through digital immersion in different 3D and 4D worlds. It comprises five modules:

Table 14: Number of Installs by Grade Level and Subject

A screenshot of the twenty (20) modules in Grade 7 & 8 Science and Mathematics Courseware for Apple IOS-enabled devices.

A screenshot of the DOST Science and Mathematics Courseware for Android-enabled devices.

The whole package of DOST Courseware for MS Windows can be downloaded from the SEI website of which by end of 2018 there are 15,844 Visitors. Download link is http://www.sei.dost.gov.ph/index.php/Programs-and-Projects/Innovations/3-1-Courseware.
2.1. A Storm is Born: Understanding Formation of Typhoon
2.2. Break on the Move: Earthquake and Faults
2.3. Journey into the Cell: The Basic Unit of Life
2.4. The Amazing Visitors of Planet Earth: Comets, Meteors and Asteroids
2.5. What’s the Matter: The Particle Nature of Matter

Two schools—Antonio Villegas Memorial VHS in Tondo, Manila and Surigao City National HS in Surigao del Norte conducted the pilot testing of SIMaTAR, and the results indicate that its applications were effective in improving the students’ understanding and mastery of science concepts, as well as their attitudes toward science in general. It was recommended that SIMaTAR modules be brought to students in island and barangay schools, and that future studies be made on their impact on students with special education needs.

A mobile application of each module for Android devices was used along with the print modules that were scanned with smartphone and tablet cameras to read and generate the digital assets.

**Project ARISE continues to soar, launches milestone innovation**

ARISE is a 21st century ecosystem of learning environments, education, information and communications technology resources and innovations that will serve as a support system to the K to 12 Curriculum and Science, Technology, Engineering, and Mathematics (STEM) education.

Taking off from one of Project ARISE’s innovations -- the 21st Century Classroom Model initiated in 2016 -- DOST-SEI set another milestone in creating the next-generation classroom with the inauguration of the 21st Century Learning Environment Model (21st CLEM), with facilities for information, communication and creative technologies designed for mobility and connectivity. It also aims to develop the learners’ 21st century skills on communication, collaboration, critical thinking and creativity.

The classrooms were inaugurated at one of the beneficiary-schools, Inosloban-Marawoy Integrated National High School (IMINHS) on August 13, 2018 in the presence of officials of DOST, SEI and other government agencies. The event was dubbed “Lipa City: Taking on the Challenge of the 21st Century” and was led by the office of Senator Ralph G. Recto and Lone District Representative Ms. Vilma Santos-Recto. They were joined by...
DepEd Secretary Leonor Briones, DOST Undersecretary for Regional Operations Brenda Nazareth-Manzano, DepEd Undersecretary Alain Pascua, DICT Acting Secretary Eliseo Rio, DOST 4A CALABARZON Director Alexander Madrigal, DOST-SEI Deputy Director Albert Manho, National Electrification Administration-Batangas Chairman of the Board Armando Cusi, Batangas II Electric Cooperation (BATELEC II) Gen. Manager Octavios Mendoza and other Lipa City LGU officials.

The 21st CLEM is under the DOST-GIA project “Effectiveness of 21st Century Learning Environment Model as a Support System to Teaching and Learning of Science and Mathematics.” In August 2017, SEI spearheaded its co-implementation with DOST 4A CALABARZON and Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD) as monitoring agency.

The pilot schools in Lipa City are listed on Table 15.

### Table 15: 21st CLEM School Beneficiaries in Lipa City, Batangas

<table>
<thead>
<tr>
<th>SCHOOL-Beneficiary</th>
<th>NO. OF STUDENTS</th>
<th>NO. OF TEACHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolbok Integrated NHS (South District)</td>
<td>1,563</td>
<td>65</td>
</tr>
<tr>
<td>Inosloban Marawoy Integrated NHS (North District)</td>
<td>3,391</td>
<td>100</td>
</tr>
<tr>
<td>Lipa City Science Integrated NHS (West District)</td>
<td>196</td>
<td>13</td>
</tr>
<tr>
<td>Pinagtongulan Integrated NHS (West District)</td>
<td>1,541</td>
<td>57</td>
</tr>
<tr>
<td>San Celestino Integrated NHS (East District)</td>
<td>1,187</td>
<td>50</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>8,080</strong></td>
<td><strong>285</strong></td>
</tr>
</tbody>
</table>

(CLOCKWISE) PINAGTONGULAN INHS 21ST CLEM; BOLBOK INHS 21ST CLEM; SAN CELESTINO INHS 21ST CLEM; LIPA CITY SCIENCE INHS 21ST CLEM.
To capacitate teachers of the five 21st CLEM pilot schools, SEI designed a program and spearheaded the conduct of trainings on education, information and communications technology as well as robotics, performance-based tasks development, English language proficiency and media and information literacy. From April to June 2018, a total of 12 modules, 24 trainings — 15 of which were conducted by SEI and 9 by partners, were successfully implemented.

Table 16 shows seminar-workshops and trainings conducted for 21st CLEM in Lipa City.

**Table 16: Seminar-Workshops and Trainings Conducted for 21st CLEM**

<table>
<thead>
<tr>
<th>Module/Module No.</th>
<th>DELED/INHS</th>
<th>INGSBERD/MAINAYOY/INHS</th>
<th>LIPA CITY SCIENCE INHS</th>
<th>PANAYANG-GALAN/INHS</th>
<th>SAN CELESTINO/INHS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Setting-Up A 21st Century Learning Environment: Maintenance, Sustainability and Best Practices</td>
<td>36 11</td>
<td>27 7</td>
<td>5 5</td>
<td>43 8</td>
<td>37 6</td>
<td>148 37 185</td>
</tr>
<tr>
<td>2 - Developing 21st Century Skills: 3RM Rainworks Skill Bank</td>
<td>17 6</td>
<td>22 7</td>
<td>6 5</td>
<td>13 11 1</td>
<td>12 1 1</td>
<td>70 20 90</td>
</tr>
<tr>
<td>3 - Teach And Integrate: Media And Information Literacy For Teachers</td>
<td>6 4</td>
<td>1 4</td>
<td>4 4</td>
<td>5 2</td>
<td>9 1</td>
<td>25 15 40</td>
</tr>
<tr>
<td>4 - DOST Courseware in Science and Mathematics Grades 7 And 8 For Teaching And Learning</td>
<td>35 13</td>
<td>24 11</td>
<td>6 5</td>
<td>43 8</td>
<td>37 6</td>
<td>143 43 188</td>
</tr>
<tr>
<td>5 - Virtual and Augmented Reality Tools For Teaching and Learning</td>
<td>35 13</td>
<td>24 11</td>
<td>6 5</td>
<td>43 8</td>
<td>37 6</td>
<td>143 43 188</td>
</tr>
<tr>
<td>7A - 3D Modeling &amp; Printing Autodesk Fusion 360 (Teachers)</td>
<td>3 3</td>
<td>3 2</td>
<td>3 2</td>
<td>4 1 5 0</td>
<td>18 7 25</td>
<td></td>
</tr>
<tr>
<td>7B - 3D Modelling and Printing using XYZ Lab 3D Printer for Students and Teachers</td>
<td>3 2</td>
<td>2 2</td>
<td>2 1 4</td>
<td>3 2 2 2</td>
<td>11 13 24</td>
<td></td>
</tr>
<tr>
<td>8A - Robotics: Learning to Code and Improving Competence</td>
<td>2 2</td>
<td>1 1</td>
<td>5 5</td>
<td>3 2</td>
<td>10 16 26</td>
<td></td>
</tr>
<tr>
<td>8B - Robotics: Advanced Coding and Leveling-Up Competitiveness - For Students</td>
<td>1 4</td>
<td>4 0</td>
<td>1 3</td>
<td>2 3 2 3</td>
<td>10 13 23</td>
<td></td>
</tr>
<tr>
<td>8C - Innovative Robotics for Schools: Strategies to Make Robotics Relevant and Meaningful in the Classrooms-For School Admins, Heads &amp; Teachers</td>
<td>4 1</td>
<td>2 3</td>
<td>3 2</td>
<td>4 0 5 0</td>
<td>18 6 24</td>
<td></td>
</tr>
<tr>
<td>9 - Integration of Versatile Instrumentation System For Science Education And Research (VISSER) In Science Laboratory Activities</td>
<td>7 0</td>
<td>9 4</td>
<td>3 3</td>
<td>8 0 8 0</td>
<td>35 7 42</td>
<td></td>
</tr>
<tr>
<td>10 - Use of Learning English Applications for Pinoys (LEAP) in Improving English Language Proficiency</td>
<td>2 3</td>
<td>13 0</td>
<td>3 1 6</td>
<td>0 6 0</td>
<td>27 4 31</td>
<td></td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>151 62 129 56 41 44 177 35 164 27 662 224 886</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**21st CLEM teachers undergo S&T capacity building activities**

DEPED SEC. LEONOR M. BRIONES TRIES THE VIRTUAL REALITY (VR) BOX WITH AN APPLICATION THAT ALLOWS EXPLORATION OF UNDERWATER SIMULATION AS DOST USEC. ALAIN PASCUA, CONG. VILMA SANTOS-RECTO AND DOST USEC. BRENDA NAZARETH-MANZANO LOOK ON.

CONG. VILMA SANTOS-RECTO AWWED BY THE EFFECT PRODUCED BY THE AUGMENTED REALITY (AR) 4D+ CARDS ON DINOSAURS AND SOLAR SYSTEM AS SHE TRIES THE TECHNOLOGY WHILE DEPED SEC. LEONOR M. BRIONES LOOKS ON.

CONG. VILMA SANTOS-RECTO GRATEFULLY RECEIVES FROM DOST USEC. BRENDA NAZARETH-MANZANO THE CEREMONIAL KEY TO THE DOST ASSISTED-PROJECT 21ST CENTURY LEARNING ENVIRONMENT MODEL (21ST CLEM) IN FIVE SCHOOL-BENEFICIARIES OF DEPED LIPO CITY AS DOST REGION 4A DIRECTOR ALEXANDER MADRIGAL AND SEI DEPUTY DIRECTOR ALBERT MARINO SHARES THE STAGE ON THIS MOMENTS EVENT.
TEACHERS OF LIPA CITY SCIENCE INHS DISCUSS THE GUIDELINES ON THE MAINTENANCE AND SUSTAINABILITY OF 21ST CLEM.

TEACHERS WORK ON THEIR OUTPUT LESSON PLANS.

A TEACHER FROM INOSLOBAN-MARAWOY INHS AUGMENTS THE MUSCULAR SYSTEM USING HUMANOID 4D+ AR APPLICATION.

TEACHERS FROM SAN CELESTINO INHS COLLABORATE ON THEIR ACTIVITY.

(UPPER PHOTO) WHILE THOSE FROM BOLDOK INHS PRESENT THEIR OUTPUT.

TRAINOR FROM PARTNER PROVIDER DSTC ASSISTS STUDENTS IN ROBOT ASSEMBLY.

OMNIFAB, INC. TECHNICAL STAFF EXPLAINS THE 3D PRINTER’S FUNCTIONALITY.
ARISE on tour

To reach out to more beneficiaries and spread awareness among teachers and learners of SEI innovations such as the 21st CLEM and the DOST Courseware in Science and Mathematics as well as emerging trends in education technologies such as Virtual and Augmented Reality, Project ARISE joined in the celebration of Regional Science and Technology Week by DOST Region 6, at the Robinson’s Mall in Roxas City, Capiz. The activity, held on August 29-31, 2018, was attended by hundreds of students and teachers from the following schools: Pawa NHS, Maindang NHS, Cuartero NHS, Balijuagan NHS, Ishmael B. Orillos NHS and Mianay NHS.

ARISE project leader Ms. Josephine Feliciano discusses features of SEI’s 21st CLEM and the DOST Courseware in Science and Mathematics.

Warm reception for 21st CMC

In 2018, a total of 758 students, teachers, education superintendents and supervisors, government organizations, local government units (LGUs), private institutions and DOST scholars, visited and benchmarked the 21st Century Model Classroom and attended the briefing on 21st century learning environment and emerging education technologies. (See Tables 1 and 2)

LEARNERS FROM ROXAS CITY TRY THE VIRTUAL REALITY (VR) APPLICATION AND AUGMENTED REALITY (AR) CARDS DURING THE DEMONSTRATION OF THESE EMERGING EDUCATION TECHNOLOGIES.

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<table>
<thead>
<tr>
<th>Table 17: Number of Visitors/Guests by Region</th>
<th>Table 18: Number of Visitors/Guests by Type of Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td>No. of Visitors</td>
</tr>
<tr>
<td>-------</td>
<td>----------------</td>
</tr>
<tr>
<td>1</td>
<td>54</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>145</td>
</tr>
<tr>
<td>MA</td>
<td>77</td>
</tr>
<tr>
<td>7</td>
<td>268</td>
</tr>
<tr>
<td>11</td>
<td>32</td>
</tr>
<tr>
<td>NC</td>
<td>207</td>
</tr>
<tr>
<td>TOTAL</td>
<td>758</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

In 2018, a total of 758 students, teachers, education superintendents and supervisors, government organizations, local government units (LGUs), private institutions and DOST scholars, visited and benchmarked the 21st Century Model Classroom and attended the briefing on 21st century learning environment and emerging education technologies. (See Tables 17 and 18)
Storybooks prepare young kids for early lessons in Science and Mathematics

To prepare children as early as possible for the formal learning system and spark within them an interest in science and mathematics, SEI initiated the development of storybooks designed for three to six year olds. The project produces eight stories written by the following experts: (See Table 19)

The storybooks were illustrated by three freelance artists: Ms. Arade Louise P. Villena, Ms. Rachel P. Batislaong, and Ms. Jennelyn Joy R. Duran. These were scheduled for printing and dissemination in 2019.

Innobox challenges teachers to be more creative

The Innobox: Search for the Most Innovative Teaching and Learning Resources in Science is...
Table 20 lists the regional Grades 7-10, and Grades 11-12 for the three categories, Grades 3-6, received, nine finalists were selected of science. Out of 76 proposals innovations in teaching and learning private elementary and secondary SEI invited teachers from public and classroom. After its launch in 2017, the implementation, it continues to Now on its second year of to be innovative and creative in DOST-SEI to encourage teachers to come up with more engaging science learning experience in their classrooms. After its launch in 2017, the project moved in 2018 to Phase II: Development of the Innovative Teaching and Learning Resource (TLR) and Classroom Visit. DOST-SEI invited teachers from public and private elementary and secondary schools to submit proposals on innovations in teaching and learning of science. Out of 76 proposals received, nine finalists were selected for the three categories, Grades 3-6, Grades 7-10, and Grades 11-12.

Table 20 shows the breakdown of submitted proposals.

Table 21: Summary of Finalists and the Title of their Respective innovations in Teaching Science

<table>
<thead>
<tr>
<th>School</th>
<th>Project Title</th>
<th>Proponents</th>
<th>Date of Monitoring Visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Congressional Integrated High School *</td>
<td><strong>“Laro ng Lahi” – Based Activities and Mechanics</strong></td>
<td>Marc Vener C. Del Caren</td>
<td>Aug 03, 2018</td>
</tr>
<tr>
<td>1. Ligao National High School</td>
<td><strong>InnovSCI (Innovative and Creative Use of Brands in Exploring Science)</strong></td>
<td>Ranonell Carl. Pena</td>
<td>Sept 26, 2018</td>
</tr>
</tbody>
</table>

Table 20: Regional Breakdown of Submitted Proposals

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of Proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades 3-6</td>
<td>13</td>
</tr>
<tr>
<td>Grades 7-10</td>
<td>58</td>
</tr>
<tr>
<td>Grades 11-12</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCR</td>
<td>1</td>
</tr>
<tr>
<td>Bohol</td>
<td>2</td>
</tr>
<tr>
<td>Cebu</td>
<td>7</td>
</tr>
<tr>
<td>Davao</td>
<td>1</td>
</tr>
<tr>
<td>Dipolog</td>
<td>3</td>
</tr>
<tr>
<td>General Santos</td>
<td>3</td>
</tr>
<tr>
<td>Guimaras</td>
<td>1</td>
</tr>
<tr>
<td>Iloilo</td>
<td>1</td>
</tr>
<tr>
<td>Leyte</td>
<td>6</td>
</tr>
<tr>
<td>Negros</td>
<td>2</td>
</tr>
<tr>
<td>Palawan</td>
<td>9</td>
</tr>
<tr>
<td>Samar</td>
<td>8</td>
</tr>
<tr>
<td>South Cotabato</td>
<td>5</td>
</tr>
<tr>
<td>Surigao</td>
<td>11</td>
</tr>
<tr>
<td>Surigao Oriental</td>
<td>12</td>
</tr>
<tr>
<td>Zamboanga Province</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
</tr>
</tbody>
</table>

* Winners of the 2018 Innobox: Search for the Most Innovative Teaching and Learning Resources in Science

Science teachers from Pio Valenzuela Elementary School, Quezon Row Elementary School, and Niigan Elementary School emerged as finalists in the Grades 3-6 category while Congressional Integrated High School, Dolores National High School, and Rizal High School teachers were selected to compete in the Grades 7-10 category. In the Grades 11-12 category, Ligo National High School, Philippine Science High School-Central Visayas Campus, and Parafaque National High School and University of Santo Tomas Senior High School were selected as finalists.

During the Classroom Visit, the technical committee observed how the teachers used their proposed innovative teaching and learning resources in their science classes. They also conducted focus group discussion among students and interviewed the principal and the project team.

Table 21 shows the summary of finalists and winners and the title of their respective innovations in teaching science.

Three winners were proclaimed during the Awarding Ceremony held on December 11, 2018 at the PICC, Pasay City. Each of the winners received P100,000 cash prize, certificate, and a trophy.
The emergence of fast-evolving digital trends has led to relevant policy and system shifts among nations, pushing government agencies to put R&D in the areas of science, technology, and innovation (STI) in high priority.

In our country, the Institute has been making headway in its thrust to accelerate technological adaptations and institutionalize progress in STEM education. Global Innovation Index reports show an upward movement in our innovation input ratings in the last five years, placing the nation from 108th out of 142 countries in 2013 to 82nd out of 126 countries in 2018. The Filipinos’ increased capacity to translate these innovation inputs into outputs is further highlighted by S&T students -- SEI scholars and non-scholars alike -- as a total of 1,469 students demonstrated excellence in various science and math competitions in the past year. A significant improvement in the numbers of highly capable, globally competent human resources can also be expected, as they continually hit record-breaking rankings and make impressive strides in the international arena.
These achievements, fueled by the Institute’s continuous efforts, lay the foundation for a more technologically adept nation, heralding a new era of sustained economic growth.

Workshop highlights mentoring strategies for research advisers

Research advisers play a critical role in molding students to become successful researchers, scientists, and engineers (RSEs). This encapsulates the importance of the Engineering Faculty Research Mentoring Workshop attended by faculty members of the ERDT Consortium Universities and held on May 18, 2018 at the Eastwood Richmonde Hotel in Quezon City.

Demonstrating ERDT’s commitment to provide development opportunities for its faculty members, the event consisted of plenary lectures in the morning. Dr. Maria Antonia N. Tanchuling of the St. Luke’s Medical Center discussed the challenges faced by student researchers and presented different ways by which research advisers can help their advisees graduate on time. A complimentary discussion aimed at enabling the participants to guide their advisees into publishing their research works soon followed.

Meanwhile, Dr. Victor B. Ella of University of the Philippines Los Baños shared strategies and tips that research advisers may use to assist their advisees in looking for the best publication opportunities for their researches, spotting and avoiding predatory journals, and ensuring that their works are ready to be published.

The third and final plenary talk circled around the promotion of mental health awareness for graduate researchers. Dr. Violeta V. Bautista of University of the Philippines Diliman shared with the participants the different types of student researchers and explored the different approaches that should be observed when dealing with them. In order to be effective research advisers, Dr. Bautista argued that faculty members must be in their best shape and sound mind as well.

After the plenary talks, a workshop was held in which the participants went through a series of activities that were designed to help them establish rapport with their advisees and execute steps in order for them to reach their goals as faculty members and research advisers.

ERDT holds 7th Congress

The Engineering Research and Development for Technology (ERDT) held its 7th Congress on July 13, 2018 at the PICC in Pasay City, maintaining its purpose to provide a platform for the better understanding of the dynamics between and among engineering, humanities and social science.

The plenary talks started with, Dr. Rowena Cristina L. Guevara, Undersecretary for Research and Development of the Department of Science and Technology and the First Program Leader of ERDT, highlighting that ERDT was founded to be an investment for global competitiveness. She explained to the ERDT scholars their crucial role in developing an S&T culture in the country, and challenged them to charge forward and create designs that will improve the lives of Filipinos through commercialization of new and emerging technologies and products of government-funded research and development initiatives.
In her plenary talk, Dr. Jazmin B. Llana further supported the principle of "engineering for the people" that was already incorporated in Dr. Guevara’s keynote speech by explaining how engineers should constantly and continuously reflect on their humanity in order to remember the bigger picture that underlies their profession.

During a break in the plenary talks, the Poster Competition commenced with 37 abstracts. Judges from different ERDT R&D tracks—Energy, Environment and Infrastructure, Information and Communications Technology, Manufacturing and Machinery, and Semiconductors, Materials and Electronics—evaluated the posters while their respective authors explained the highlights of their studies.

The plenary talks resumed with Prof. Leonardo C. Rosete, Dean of UP College of Fine Arts. He discussed “Arts in Engineering”, pointing out how design, which he described as the ‘integration of engineering process with an art lens’, perfectly reflects how engineering is not just about creation and durability but also aesthetic. Prof. Rosete posits that better appreciation of engineering can be found by rediscovering the beauty in designs.

Meanwhile, Prof. Jerry R. Yapo — Director of the Office for Initiatives in Culture and the Arts of the University of the Philippines – Los Baños, explored the topic “Humanities in Engineering”. Posing that creativity fuels innovation, he provided examples in which engineers and scientists found inspiration in human experiences. He also emphasized that despite the differing natures of engineering and humanities, these fields converge on a point characterized by discovery, wonderment and imagination.

The last plenary talk was that of Fr. Bienvenido F. Nebres, former President of Ateneo de Manila University. Fr. Nebres grounded his discussion on the two engineering challenges (mass transportation systems and managing water) that greatly affect Philippine society today. He explained how the demand for adjustments from communities, new engineering and technical expertise and leadership competence shall serve as components in preparing for the future.

DOST hosts 15th ERDT Conference

The 15th DOST ERDT Conference was held last September 27-28, 2018 at the Manila Hotel. It was co-located with the 11th AUN/SEED-Net Regional Conference on Energy Engineering.

Dr. Nizalinda L. De Leon, Program Leader of ERDT, formally opened the event by welcoming the participants and briefly running through the causes for which the ERDT was founded.

In her welcome address, Ms. Oshima Ayumu (Senior Representative of JICA Philippines) discussed the importance of interdisciplinary and intercultural collaborations, research and innovations in building a resilient region.

Entitled “Challenges and Opportunities for the Research Professional in a Changing Environment”, Dr. Enrico Paringit’s keynote speech delved on how research engineers can make use of technology to address real-world problems. As a case study, Dr. Paringit discussed the work of Phil LiDAR and the spectrum of applications for its data and information products.

Dr. Francisco Viray, President and Chief Executive Officer of PHINMA Energy Corporation, presented fresh ideas in his plenary talk, “Driving Sustainable Energy and Deregulated Power Industry”. He also talked about current initiatives of private corporations that are geared towards developing the country’s energy industry.

Prof. Hideaki Ohgaki approached the thematic of renewable energy on a pragmatic level by discussing in detail the impact of renewable energy on the quality of life in rural communities in ASEAN countries.

Speaking in behalf of the Department of Energy, Atty. Marissa Cerezo expounded on the “Status of Development of Renewable Energy Resources in the Philippines” by explaining the department’s renewable energy roadmap and the milestones of RA 9513 (Renewable Energy Act of 2008) to date. She also explained the challenges and steps in moving toward subscribing to greener energy options for the country.

Capping off the morning plenary session for the first day of the Conference is Asec. Rafaelita Alabada, who highlighted the role of science and technology in the development of the Philippines.
in the inclusive, sustainable, and innovation-led industrial policy for poverty alleviation and economic transformation of the Department of Trade and Industry.


The plenary speech of ERDT Visiting Professor, Dr. Mikio Umeda, jump started the second day of the Conference. He started by contextualizing and characterizing the Conference. He started by jump starting the second day of Visiting Professor, Dr. Mikio Umeda, Technology. IE

Dr. Jun Tamimoto provided a “Statistical Analysis on the Effect of Outdoor Air Temperature History on Occupants: Usage of Air-Conditioners in Dwellings”. He concluded that the weighted mean of outdoor temperature explains air conditioning usage well.

Prof. Keiichi Ishihara explained “The Role of Decentralized Energy Systems” in his plenary speech. Prof. Ishihara grounded his discussion by explaining how FVC is helpful for the purpose of disaster management especially in countries that are frequented by natural calamities.

Dr. Carlo Arcilla, Director of the Philippine Nuclear Research Institute, then captured the interest of the audience by discussing a partly controversial topic, Nuclear Engineering Possibilities in the Philippines.

The last plenary speaker was from Indonesia’s Gadjah Mada University. Dr. Pri Utami talked about “Geothermal Energy Development: A Synergy Between Science and Engineering”. Dr. Utami’s plenary talk was especially relevant considering that both her home country and the Philippines are located around the Pacific Ring of Fire where most geothermal energy can be harnessed.

During the afternoon parallel sessions of the second day, the topics covered included: (1)

<table>
<thead>
<tr>
<th>Group</th>
<th>Name</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Dr. Alexandre Barena</td>
<td>Project Leader, ODP</td>
</tr>
<tr>
<td></td>
<td>Dr. Gerson Serrata</td>
<td>Project Leader, DOST-NSC</td>
</tr>
<tr>
<td></td>
<td>Dr. Jonathan Salvador</td>
<td>Project Leader, FFCC</td>
</tr>
<tr>
<td></td>
<td>Dr. Evelyn Tabalada</td>
<td>Project Leader, FFCC</td>
</tr>
<tr>
<td></td>
<td>Dr. Rizalda de Leon</td>
<td>Project Leader, ERDT</td>
</tr>
<tr>
<td></td>
<td>Engr. Albert Mariño</td>
<td>Deputy Director, SEI</td>
</tr>
<tr>
<td></td>
<td>Dr. Arnell A. Angono</td>
<td>Project Leader, CSID</td>
</tr>
<tr>
<td></td>
<td>Dr. Jonathan Donate</td>
<td>Project Leader, DOST-NSC</td>
</tr>
<tr>
<td></td>
<td>Dr. Arnold E. Obano</td>
<td>Project Leader, ODP</td>
</tr>
<tr>
<td></td>
<td>Dr. Elvira de Leon</td>
<td>Project Leader, DOST-NSC</td>
</tr>
<tr>
<td></td>
<td>Dr. Roberto Morales</td>
<td>Project Coordinator, MDO-RT</td>
</tr>
<tr>
<td></td>
<td>Engr. Ricardo Franco</td>
<td>Project Coordinator, DSC</td>
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<tr>
<td></td>
<td>Dr. Juanito Talaaban</td>
<td>Director, PCARRD-ARMED</td>
</tr>
</tbody>
</table>

Table 22: Composition of the TBI Groups

The delegation was divided into three groups that explored Technologies and innovations on agricultural engineering by visiting host Institutions in Israel and Japan. (See Table 22)

The objectives of the tours were defined according to the focal points of each group. Focusing on “agriculture under arid conditions and on marginal soils” and “water management and utilization”, Group A visited Technion (Israel Institute of Science and Technology), Agricultural Research Organization-Volcani Center, and Alfeyk Emek Hefer Association. The area of focus was “Plant Nutrition and Horticulture”, prompting them to visit Japan Plant Factory Association and Hokkaido University. Group C met


In his Closing Address, Engr. Albert Maríño explained SEI’s desire to continue to empower its scholars by supporting similar activities that expose them to different learning opportunities.

ERDT Committee sets out on Technology Benchmarking Initiative

The ERDT Steering Committee Members, along with DOST-SEI Deputy Director Albert Maríño and a private sector representative of the ERDT Program Advisory Council, embarked on a Technology Benchmarking Initiative for the benefit of the agricultural regions of the country. In 2018, the activity was mainly anchored in the Agriculture, Aquatic and Natural Resources (AANR) Research and Development Agency 2017-2022 and the Department of Agriculture’s PhilRice Strategic Plan 2017-2022.

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The objectives of the tours were defined according to the focal points of each group. Focusing on “agriculture under arid conditions and on marginal soils” and “water management and utilization”, Group A visited Technion (Israel Institute of Science and Technology), Agricultural Research Organization-Volcani Center, and Alfeyk Emek Hefer Association. The area of focus was “Plant Nutrition and Horticulture”, prompting them to visit Japan Plant Factory Association and Hokkaido University. Group C met
with researchers and checked out the laboratories of Nara Institute of Science and Technology, Kyoto University, and Yanmar Co., Ltd. to learn new technologies and innovations on “plant biology and agricultural machineries”. (See Table 23)

Summative Evaluation of the Technology Package for Student Learning and Empowerment Project

To determine the effectiveness of the DOST courseware for teaching and learning elementary school mathematics, the Institute undertook an evaluation project of the Technology Package for Student Learning and Empowerment. The results of the study will be used to improve the quality of the software packages to be developed, as well as influence policy and future project design and implementation.

The project was outsourced to UP National Institute for Science and Mathematics Education Development (UPNISMED). As of December 18, 2018, the project completed the following activities:

1. Development of a total of six (6) data gathering instruments
2. Twelve (12) classroom observations
3. Fourteen (14) student group interview sessions (6 students/group)
4. Twelve (12) Principal interview sessions
5. Nineteen (19) teacher interview sessions
6. Technology package utilization survey from twelve (12) schools

Other data gathering activities were scheduled in January and February 2019, namely: School visits to three (3) more schools for class observations, interviews with teachers, students, school principals, and mathematics coordinators; and Interviews with Project Team from DOST-SEI, UP NISMED, and DOST-ASTI.

The data gathered were scheduled for processing and analysis in March 2019, and the Evaluation Report targeted for submission the following month.

Linkages enhance capacity building in STEM education

Two notable developments came about to enhance the linkages that the Institute initiates to fulfill the goal of building the country’s capacity in Science, Technology, Engineering and Mathematics education. These initiatives benefit specifically the faculty members of partner universities, SEI project implementers and project STAR trainers through exposure to global practices in STEM education, opportunities for international collaboration and research, and integration of best practices and innovations into the partner universities’ thrusts and goals.

1. Partnership with the Philippine Nuclear Research Institute (PNRI-DOST) for the implementation of Project RAS project RAS0079 or “Educating Secondary Students and Science Teachers on Nuclear Science and Technology”.

This partnership enabled SEI, through Project STAR, to send participants to the International Atomic Energy Agency (IAEA) trainings on nuclear science. Ms. Jo-ann Cordovilla of Bicol University, and Ms. Charity Mulig Cruz from Mindanao State University-Iligan Institute of Technology (MSU-IIT) were sent to the “Regional Training Course for Teachers to Introduce Nuclear Sciences in Secondary Schools through Innovative Approaches” in Yogyakarta, Indonesia from April 16-27, 2018 and Argonne, Illinois, USA from August 20-31, 2018. The said training aimed to increase the understanding and peaceful applications of nuclear science and technology education.

<table>
<thead>
<tr>
<th>Country</th>
<th>Host Institution</th>
<th>Area/s of Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel</td>
<td>Technion (Israel Institute of Science and Technology)</td>
<td>Agriculture under and conditions and on marginal soils, &amp; water management and utilization for farming</td>
</tr>
<tr>
<td></td>
<td>Agricultural Research Organization - Volcani Center</td>
<td>Plant nutrition and horticulture</td>
</tr>
<tr>
<td>Japan</td>
<td>Japan Plant Factory Association</td>
<td>Plant biology and agricultural machineries</td>
</tr>
<tr>
<td></td>
<td>Hokkaido University</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nara Institute of Science and Technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kyoto University</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yanmar Co., Ltd.</td>
<td></td>
</tr>
</tbody>
</table>

(ABOVE) GROUP A WITH THE EXECUTIVE DIRECTOR OF AGRICULTURAL RESEARCH ORGANIZATION - VOLCANI CENTER. (OPPOSITE) SOME OF THE ACTIVITIES CONDUCTED DURING THE EVALUATION PROCESS.

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83
SEI employees undergo continuous learning for research and innovation

DOST-SEI continued to invest on opportunities that provided its officials and project staff with new skills and knowledge, such as local and international conferences, seminars and other relevant S&T trainings. Through these activities, the participants were able to gather new ideas and trends in science learning and teaching activities, as well as enhance linkages with educational organizations to raise the quality of programs being implemented by the Institute.

The seminars and trainings attended by SEI staff consisted of the following:

- 10th International Conference on Teacher Education, August 23-25, 2018
- Educational Data Mining and Learning Analytics for 21st Century Competencies, sponsored by the UP College of Education and the National Institute of Education of Singapore, November 23, 2019
- Basic Graphic Design and Layout on November 28-29, 2018

UP-NISMED conducts Project HOTS evaluation

DOST-SEI commissions UP-NISMED to conduct an evaluation of the Project HOTS or the Hands-on Teaching and Learning of Science through Inquiry. Project HOTS develops and implements a model for teaching Science using the inquiry-based approach, hands-on learning activities, integration of technology, and the use of a mobile science laboratory.

Since the project has been implemented for the past four years, an evaluation was necessary to identify areas of improvement, enhance its design and implementation, and recommend policies and action points to improve the teaching and learning of elementary science.
The following activities were undertaken:
1. Development of 10 instruments used to gather evaluation data for Science Teacher. School Science Coordinator, School Head, Division Science Supervisor, Students, Project HOTs Staff from SEI and UP-NISMED.
2. Conduct of Interviews to 73 interviewees
3. Observation of ten (10) classrooms
4. Conduct of online survey with 38 respondents
5. Data Processing and data analysis using qualitative and quantitative techniques

The major findings are summed as follows:
• Inquiry-based teaching helped teachers teach science better with 57.9% of the 38 teachers who responded to the online survey reported that they developed inquiry-based lessons even in other subjects such as English.
• 81.6% of the teacher respondents of the online survey are still using the inquiry-based lessons they developed during the Project HOTs training.
• Others expressed that inquiry-based teaching helps students express their own ideas and knowledge and allows them to discover the answers to their questions through hands-on experiments. The inquiry-based activities also help them grasp the concepts better, making them more engaged in their learning, more confident, and more communicative.

Based on the observations of principals, conducting a lesson study helped teachers become more collaborative in developing lessons and encouraged them to consult with one another. On the other hand, the teachers expressed difficulty in collaboration due to limited time and conflict in schedules.

The new study is focused on determining significant factors affecting ICT integration in teaching among science and mathematics teachers. It is anchored on the rationale that the proliferation of digital technology, particularly ICT, in the 21st century has challenged the status quo of educational setting and led to a paradigm shift in teaching and learning processes.

Applying the Will-Skill-Tool (WST) model developed by Christensen and Knezev (2001, 2008) in the local context, the study revealed the following significant predictors of ICT integration: marital status ($\beta = .17$, $p < .001$), attitude towards ICT ($\beta = .37$, $p < .001$); ICT skills index ($\beta = .35$, $p < .001$); and availability of ICT resources ($\beta = .30$, $p < .001$).

Results indicate that high ICT integration index is more likely among single, science teachers, with high (positive) attitude towards ICT, with high ICT skills index, and with high availability of ICT resources. Among the significant predictors, attitude towards ICT has the highest coefficient, followed by ICT skills index, and sex and age are not found to be significant predictors of ICT integration.

The model explained 55% of the total variation in ICT integration index. (See Figure 4)

The results are useful in developing policies that will address the barriers that negatively influence the use of ICT in teaching practices for both STEM and non-STEM teachers. Knowing that teachers’ ICT competence and attitude toward ICT are important predictive factors, pre-service and in-service education of teachers may also be assessed to determine their adequacy in addressing these factors. This can lead to the formulation of more responsive curriculum at the pre-service level by the Commission on Higher Education (CHED) and of programs for continuing professional development by the Department of Education (DepED).

Moreover, the policies to computerize (Department of Education, DO 78, s. 2010) and provide Internet connectivity to public schools (Department of Education, DO 46, s. 2011) should be evaluated and matched with teachers’ competencies so that both skills and tools are maximized.

Tracer study reveals more scholar-grads occupying permanent jobs

The Tracer Study Fact Sheet No. 4 provides a snapshot of the path of scholar-graduates after graduation, highlighting particularly their employment in the labor market. The scholars responded to the on-line registration system of scholar-graduates and from the Tracer Study questionnaires issued from June 2015 to October 2018.

The fact sheet showed that majority of the 4,010 DOST-SEI scholar-graduates tracked occupy permanent positions in the private and government sectors. Most scholars who participated in the study are employed, while 10.2% are unemployed (e.g., newly graduates; currently looking for a job; recently resigned; end of contracts; planning for work abroad, etc.). Less than six percent are pursuing graduate studies and BS degree courses, and preparing for the licensure board examination.
WE ARE SCIENCE EXPLORERS! ELEMENTARY AND HIGH SCHOOL STUDENTS FROM APAYAO LEARN ABOUT WATER RESOURCES AND GET A GLIMPSE OF A GEOLOGIST’S WORK WITH SCIENTIST PAMELA TOLENTINO OF UP-NATIONAL INSTITUTE OF GEOLOGICAL SCIENCES.

DOST SCHOLAR WARNER CARAG TRAINS STUDENTS FROM BALUNGAO NATIONAL HIGH SCHOOL TO OPERATE A MICROSCOPE AND SEE DIFFERENT SPECIES OF MICROORGANISMS DURING THE SCIENCE EXPLORER ROAD TRIP IN PANGASINAN LAST NOV 12-16, 2018.

STUDENTS FROM TARLAC VISUALIZE HOW THE PROPERTIES OF DIFFERENT LIQUIDS VARY FROM EACH OTHER DURING THEIR EXPOSURE IN SCIENCE EXPLORER CENTRAL LUZON WITH CHEMIST MIKO BELGADO OF UP LOS BAÑOS.

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About 95% of the scholar-graduates are employed locally, majority of whom are in private companies (58.3%), followed by those who work in public or government sector (28.9%), academe (10.2%) and NGOs (0.9%). A majority also occupy permanent positions in the private and government sectors, while less than 50% are permanent in the academe.

Most of the scholar-graduates are engaged in S&T fields, while less than 20% are in non-S&T fields. Majority are graduates of Engineering and Technology and Natural Sciences. Less than five percent are graduates in the fields of Agriculture and Veterinary Sciences, while about 35% of the scholars tracked are employed in the field of Education.

DOST Scholarship Program gets excellent rating in scholar exit survey

An “Excellent” overall rating was accorded to the scholarship program by the majority of the 1,233 graduating scholars in 2018 who participated in the Scholar Exit Survey 2018 Series No. 2, while a “Very Satisfactory” rating was given for the overall scholarship experience. Graduating scholars in the undergraduate level were “Very Satisfied” with most of the services related to their stipends, and with the DOST-SEI’s readiness to address their problem.

The scholars who participated in the 2018 survey are mostly from NCR, Western Visayas, Central Visayas, and Davao provinces.

Most of the scholars believed that the program significantly strengthened their commitment to serve the country and made them realize their important roles in nation-building.

Science Explorer entices young students to STEM with new modules

The Science Explorer, the country’s first and only mobile learning science facility, visited provinces in Luzon and graced National and Regional Science and Technology Week festivities to give elementary and high school students a “ride to the future”. It also crossed waters to reach young learners in Iloilo and Northern Samar. In 2018, the project served a total of 4,647 students from 136 schools. (See Table 24)

Table 24: Science Explorer 2018 Road Trips

<table>
<thead>
<tr>
<th>Month</th>
<th>Venue</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>Number of Schools served</th>
<th>Number of Municipalities Served</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>Buda, Pinaco</td>
<td>474</td>
<td>369</td>
<td>843</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>May</td>
<td>La Union</td>
<td>240</td>
<td>112</td>
<td>352</td>
<td>10</td>
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<tr>
<td>June</td>
<td>Northern Samar</td>
<td>553</td>
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<td>850</td>
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<td>August</td>
<td>Talic</td>
<td>192</td>
<td>119</td>
<td>311</td>
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<tr>
<td>September</td>
<td>Taguig</td>
<td>46</td>
<td>64</td>
<td>110</td>
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<td></td>
<td>Pangasinan</td>
<td>281</td>
<td>141</td>
<td>422</td>
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<tr>
<td>October</td>
<td>Aparay</td>
<td>342</td>
<td>163</td>
<td>505</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>November</td>
<td>Balanga</td>
<td>219</td>
<td>429</td>
<td>648</td>
<td>14</td>
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<tr>
<td>December</td>
<td>Casig</td>
<td>242</td>
<td>336</td>
<td>578</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Total</td>
<td></td>
<td>2597</td>
<td>2050</td>
<td>4647</td>
<td>22</td>
<td>22</td>
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</tbody>
</table>

4. Weather Science
5. Marine Science
6. Astronomy
7. Microbiology
8. Physical Oceanography
9. Landslides
10. Coastal Morphology
11. Wildlife Biodiversity
12. Health and Nutrition
13. Genomics
14. Rice Biotechnology
15. Robotics
16. Programming
17. Watershed and Floods
18. Earthquake
19. Tsunami
20. Polymers
Some of the country’s top young scientists also joined The Explorer caravan to facilitate fun, interactive science experiments. In July 2018, the DOST-SEI started the purchase, design and fabrication of “NuLab,” the second Science Explorer Bus. By December 2018, 85% of the project was completed.

**DOST-SEI widens reach with strategic communication**

DOST-SEI amplified its communication strategies to inform a wider audience about the various projects of the Institute and invite more students into STEM careers. A total of 26 press releases were disseminated to various mass media outlets, generating at least 240 media placements (up by 233% from 72 in 2017), including TV and radio spots in community and major broadcast networks.

The Institute also utilized its social media accounts to connect with the fast-growing population of Filipino Internet users. DOST-SEI’s Official Facebook account registered 44,500 followers in 2018, 29% up from last year’s 34,400.

To generate support from the media in promoting the Institute’s programs and projects, DOST-SEI also organized a Press Conference last November 21, 2018 at the Sequoia Hotel in Quezon City. Dr. Josette Biyo, with Division Chiefs Ms. Ruby Laña and Dr. Ruby Cristobal, addressed the media during the event.

**Challenges of IR 4.0 Tackled in NSTW & RSTW Celebrations**

The Institute showcased its programs for the youth as it participated in the 2018 National Science and Technology Week (NSTW) and in Regional Science and Technology Week celebrations all over the country with the theme “Innovation for Collective Prosperity.”

Together with other DOST agencies, SEI held its science, technology, and innovation in school exhibit with the subtheme “Nurturing Innovators Towards A Transforming World” from July 17-21, 2018 at the World Trade Center in Pasay City.

The exhibit showcased various programs and projects focused in building a learning environment that will produce future professionals in the emerging fields of cloud computing, Internet of things (IoT), big data/data analytics, robotics, 3D printing, augmented reality, bioengineering, nanotechnology, new energy sources and technologies, and artificial intelligence.

**Project UPSTART**

To complement the NSTW celebration, DOST-SEI organized a two-day research event, “Upgrading of Science and Technology Research Trends (UPSTART).” The project seeks to update public senior high school students in the STEM strand in Metro Manila on the current trends in scientific research and on innovative practices that may help them improve on their science investigatory projects.

The event, held on July 18-19, 2018 at the PICC in Pasay City, was attended by 100 high school students from various schools in Metro Manila.

Experts from different disciplines shared their knowledge, expertise, and experience on the current trends and innovations in their respective fields. Participants were also given pointers in making effective presentations, enabling them to present their ongoing researches which were critiqued for improvement by different science experts.
Science Film Festival

DOST-SEI’s partnership with the Goethe Institut Philippine continues with the celebration of the 2018 Science Film Festival (SFF). Hundreds of students, teachers, and other guests attended the Opening Ceremony at the SM Megamall in Mandaluyong City on November 12, 2018.

Science films from all over the world were also screened during the NSTW and RSTW festivities and in Science Explorer road trips. Copies of the SFF films were distributed to Philippine Science High School (PSHS) campuses, selected public schools, and DOST Regional Offices for scheduled screenings during the Festival Season.

Fourteen DOST regional offices and PSHS campuses joined the Philippine screening with a total reach of 16,641 viewers across the country.

#PUSH4SCIENCE campaign engages more potential scholars

The project, Expanding the Reach of the DOST Scholarship Program to Priority Municipalities, also known as “#Push4Science: Maging DOST Scholar Ka!”, continued to make inroads in municipalities that had minimal to zero examiners in the previous scholarship qualifying exams.

In 2018, the campaign directly reached 46 municipalities from seven (7) provinces in six (6) regions. It served a total of 3,561 students and teachers—up from 2,989 the previous year—from schools in various high schools and universities.

The Campaign followed the same promote-inspire-persuade framework from the previous years and widely engaged senior high school and college students enrolled in priority S&T courses through inspirational talks from ongoing scholars and scholar-graduates, interactive activities, and scholarship orientation.

The activities also focused on the increased benefits provided by DOST-SEI to urge potential students to consider becoming scholars through the undergraduate scholarships being offered. The campaign team developed visual materials to illustrate the whole process of applying for the scholarship programs, and the opportunities that may open up once students graduate from STEM courses.

The team also established links with school/university officials to get their sustained support primarily in facilitating the application of the students. Scholarship Coordinators were also provided with promotional materials to aid them in publicizing the Program during the application process.

For the other municipalities that were not directly reached, Scholarship Campaign Kits were provided to the PSTCs and the university officials for their respective scholarship caravans. Posters, brochures and other collaterals were also distributed during the National Science and Technology Week celebrations in Davao City and in Metro Manila, as well as in regional S&T fairs. A multi-lingual radio plug about the undergraduate scholarship program was also transmitted to partners and radio contacts.
Science Camp in Siquijor raises awareness on climate change

A series of experiential learning activities about oceanography and climate science was held at the Gold View Beach Resort in the island of Siquijor, Central Visayas Region for the 2018 Climate Science Youth Camp. It was held from April 16 to 24 and attended by 40 high school students and 20 teachers from various public schools in Siquijor, Negros Oriental, Negros Occidental, Iloilo and Cebu.

Its theme, “The Oceans and Climate towards a Resilient Planet”, aimed to promote Oceanography and Meteorology as STEM careers and to enable students to understand how these two fields interact and play a vital role in climate science.

The lectures covered major topics in marine science and meteorology, such as hydrometeorological hazards, weather observation, climate change, weather forecasting, ocean streams, and climate change impacts.

A field exposure activity in one of the barangays in Siquijor also demonstrated marine biodiversity, such as coral reef, seagrass, and mangroves and community interaction. Students learned to facilitate focus group discussions with concerned stakeholders and understood the interaction between the community and their environment.

This is the camp’s eighth run and the second time in Siquijor. Students got to spend more time in the ocean with no less than marine scientists from the University of the Philippines-Marine Science Institute (UP-MSI) and weather forecasters and meteorologists from the Philippine Atmospheric, Geophysical and Astronomical Services Administration (DOST-PAGASA) as camp facilitators.

Science docus reap awards in 3rd Indie-Siyensya

The 3rd Indie-Siyensya Film making Competition capped off 2018 with seven films finally earning the nod of judges after going through 300 film concept proposals and 45 film entries.

Indie-Siyensya aims to promote a culture of science in the country using film as a medium. The winning films captured the role of science and technology in addressing some of the most pressing national and community issues.
while junior high school students place for their film "Akuwakultura" Science High School won third of Angelo Cruz from Rizal National of Cebu. butterfly extinction in the province where the Jumalon family fights on the Jumalon Butterfly Sanctuary "Sugbuanong Alibangbang" is a film practice in the Philippines. research team on permaculture while the latter follows a small hazards in vegetable farm terraces S&T interventions that help Benguet security issues. The former features agriculture, environment, and food The Food We’ll Eat" both tackle "Dagem" and "The Land Will Grow, "Sugbuanong Alibangbang" (1st Place) of Cebu Normal University for "The Land Will Grow, The Food We’ll Eat" (2nd Place); and Edward Laurence Opena from Cavite National High School, bagged the top prize for his film “Manglares (Buhay at Peligro)”, a film on disaster mitigation. The winners earned trophies and cash prizes amounting to 100,000 pesos for the Best Film, 50,000 pesos for the second place and 25,000 pesos for the third place. “Bakas”, a film by Kiano Bacolod from the Philippine Science High School-Central Luzon Campus earned the Viewer’s Choice Award, a trophy and P10,000 cash prize for its depiction of the use of forensic science in solving crimes. Judges included: • Prof. Garry Jay Montemayor, Chair of the Department of Science Communication, College of Development Communication, UP-Los Bahos • Seymour Barros Sanchez, an advocacy filmmaker and educator from the De La Salle- College of Saint Benilde Digital Filmmaking program and Far Eastern University Department of Communication • Prof. Patrick Campos, director of the UP Film Institute • Dr. Mudjikewis “Mudjie” Santos, father and founder of the Genetic Fingerprinting Laboratory under the Department of Agriculture-National Fisheries Research and Development Institute • Dr. Reinabelle “Reina” Reyes, an astrophysicist and data scientist who became known as “the Filipina who proved Einstein right” with her work on his Theory of Relativity. A total of 1,275 students and teachers attended the screenings on November 12-16, 21, 26 and 27 at various venues in Panagsangaan, Rizal, and NCR. The 3rd Indie-Siyensya, conducted in partnership with the Film Development Council of the Philippines (FDCP), culminated in a closing and awarding ceremony on November 28, 2018 at the PICC. Winners in the Open Category are Hector Badis of Cordillera Consortium Agriculture, Aquatic and Resources Research and Development (CCAAARRD), formerly HAARRDEC for the film “Dagem” (3rd Place); Brian Sulicinan of Ambasy-Ambayan Collective for “The Land Will Grow, The Food We’ll Eat” (2nd Place); and Edward Laurence Opena of Cebu Normal University for “Sugbuanong Alibangbang” (1st Place). “Dagem” and “The Land Will Grow, The Food We’ll Eat” both tackle agriculture, environment, and food security issues. The former features S&T interventions that help Benguet farmers mitigate climate change hazards in vegetable farm terraces while the latter follows a small research team on permaculture practice in the Philippines. “Sugbuanong Alibangbang” is a film on the Jumalon Butterfly Sanctuary where the Jumalon family fights butterfly extinction in the province of Cebu. In the Youth Category, the group of Angelo Cruz from Rizal National Science High School won third place for their film “Akuwakultura” while junior high school students Cyah Angela Samblingo, Johan Villanueva, and Norie Bautista from Cavite National High School students won the second place for their film “Lambat”. "Akuwakultura" shows the importance of aquaculture in Laguna Lake while “Lambat” documents water pollution in Cavite. Patrick Pimentel, a senior high school also from Cavite National High School, nabbed the Acer IoT Award. The projects of the four school teams basted 12 other projects in the Final Presentation and Awarding Ceremony held on December 3-4, 2018 at the Crimson Hotel in Alabang. Dr. Josette Bilo, DOST-SEI Director, and Manuel Wong, Managing Director of Acer Philippines, the lead partner innovator, presented the awards. The imake.wemake: create. innovate. collaborate competition challenges young Filipinos to use their creativity, discover their potentials, and learn the process of using innovation to help their community of interest. Senior high school students will get the opportunity to pitch, build, and present their projects based on accessible technological platforms. In 2018, senior high school teams from the Technological Institute of the Philippines-Cabuso Campus, Philippine Science High School-Eastern Visayas Campus, and New Era University won the coveted Youth Innovation Prize and P50,000 cash while College of St. John-Roxas nabbed the Acer IoT Award. The imake.wemake sparks creativity and innovation among students
The panel of judges, composed of UP Electrical and Electronics Engineering Institute professors Dr. Nestor Tipego and Engr. Percival Magpantay, and Ateneo de Manila University professor Engr. Carlos Mati Oppus, chose the top projects for the year’s competition for their viability and potential to address important societal and community issues. These were Technological Institute of the Philippines-Cubao Campus’ weather advisory system, “Project Antun Tabu”; Philippine Science High School-Eastern Visayas Campus’ “Smart Automated Aquaponics System”; and New Era University’s “Automated Irrigation and Electro Culture”. The judges also picked College of St. John Roxas’ “VIBRAVA Smart Watch: Your Ear To Disaster” project as a recipient of the very first Acer IoT Award in make.wemake.

The competition, which is now on its second run in 2018, received a total of 64 proposals, out of which only 16 made it to the next round, a five-day project pitching and technical training workshop under Think Lab and Acer Taiwan’s Kevin Chuang held on September 3-7, 2018 at the Microtel Hotel in Quezon City. Each team, composed of three senior high school students and one teacher-coach, received free sensor expansion pack, microcontroller unit, and the Acer Cloudprofessor kit. After the workshop, they were given three months to develop, test, and validate their projects. All 16 team finalists were able to present their finished projects, using the Acer Cloudprofessor as platform.

After the workshop, they were given three months to develop, test, and validate their projects. All 16 team finalists were able to present their finished projects, using the Acer Cloudprofessor as platform.

Students with top sustainability research projects bag BPI-DOST Science Awards

College students with groundbreaking sustainability research projects won at the 29th BPI-DOST Science Awards, a joint project of DOST-SEI and BPI Foundation. The top two (2) winners are (See Table 25):

<table>
<thead>
<tr>
<th>Name and University</th>
<th>Project Title</th>
<th>Awards/Prizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicole Rose Alberto UP Diliman</td>
<td>“Identification of Molecular Receptors for the Detection and Management of Fish Pathogens”</td>
<td>Project of the Year, Best In Innovations Award</td>
</tr>
<tr>
<td>Peter Nicholas Onglao UP Diliman</td>
<td>“Chlorine-coated silica nanostructures for wastewater treatment for carbon dioxide capture”</td>
<td>Best in Innovations Award</td>
</tr>
</tbody>
</table>

Table 25: 29th BPI-DOST Science Awards Winners

Eight (8) other students were recognized for conducting research and developing technologies that would help prepare the Philippines become future-proof or resilient to calamities, social vulnerability, and economic crises. The research projects of Ma. Catherine Lagare, Ateneo de Davao University; Allena Mari Miranda, Ateneo de Manila University; Gabriela Ilona Janairo and Janne Pauline Nga, De La Salle University; Arianne Justine Obelos and Josh Christian Protacio; UP-Manila; John Cristopher Denez, UP-Los Baños; and Mary Diane Pilapi, University of San Carlos emphasized this year’s theme, “Forming a sustainable country through science and innovation”.

The preliminary judging was conducted on May 11, 2018 wherein the Board of Judges selected innovative Applied Science Projects that have the greatest potential for scaling up, transforming into viable enterprises, and creating impact on people and the planet. The awarding ceremony was held on June 6, 2018 at the Ayala Banquet Hall, Makati Sports Club.

Pinoy Math geniuses vie for top spots in 20th PMO

The Philippine Mathematical Olympiad (PMO), organized by DOST-SEI together with the Mathematical Society of the Philippines (MSP), marked its 20th year with a total of 4,678 junior and senior high school students taking up the qualifying examination. Out of these, 208 made it to the Area State while 21 competed in the National Stage.

PMO veteran Kyle Patrick Dulay of the Philippine Science High School – Main Campus bagged the 1st place and first-time National Stage winners Emmanuel Osbert Cajayon of Emilio Aguinaldo College and Vincent dela Cruz of Valenzuela City School of Mathematics and Science took the 2nd and 3rd places, respectively.

Dulay finally claimed the top spot after his first runner up victories in the 2016 and 2017 PMO finals. He

L-R top row: Mr. Ronal Laureto, Dr. Eric Punzalan, BPI Foundation Executive Director Maricela San Diego, Peter Onglao, Nicole Alberto, DOST SEI Deputy Director Engr. Albery Harriete, Dr. Joel Marni Ee, Engr. Matthew Recollete, Mr. Jonathan Paz, and the BPI-DOST Science 2018 Awardees.

BEST IN INNOVATIONS AWARD WINNER, PETER NICHOLAS ONGLAO OF UP DILMAN.

PROJECT OF THE YEAR AWARD WINNER, NICOLE ROSE ALBERTO OF UP DILMAN.
took home ₱20,000 cash prize, a medal, trophy and gifts from Sharp and Manulife. Cajayon got ₱15,000 cash prize while Dela Cruz received ₱10,000 along with medals, trophies and gifts.

The final round of competition and awarding ceremony was held on January 20, 2018 at the Ateneo de Manila University in Quezon City. The National Stage finalists went through a five-phase Mathematical Olympiad Summer Camp (MOSC), the results of which determined the composition of the Philippine Team in the International Mathematical Olympiad (IMO).

The 2018 PMO was also supported by private sector sponsors Hyundai Asia Resources, Inc. Foundation, Manulife Business Processing Services, Foundation for Upgrading the Standard of Education, Inc., and Sharp Calculators.

PH nets another gold in the International Mathematical Olympiad

The Philippines won a gold medal, a silver medal, two bronze medals, and two honorable mentions in the 59th IMO held in Romania by trainer Mr. Carlo Francisco Adajar of UP-Diliman. The local team was headed by Dr. Richard Eden and Deputy Leader Dr. Christian Paul Chan Shio, both of Ateneo de Manila University. They were joined in Romania by trainer Mr. Carlo John Patupat of De La Salle Christian College, both secured Bronze Medals. Andres Rico Gonzales III of DLSU Integrated School and Sean Anderson Ty of Zamboanga Chong Hua High School each won an Honorable Mention Award.

The 2018 PMO was also supported by private sector sponsors Hyundai Asia Resources, Inc. Foundation, Manulife Business Processing Services, Foundation for Upgrading the Standard of Education, Inc., and Sharp Calculators.

**PH nets another gold in the International Mathematical Olympiad**

The Philippines won a gold medal, a silver medal, two bronze medals, and two honorable mentions in the 59th IMO held in Cluj-Napoca, Romania, from July 3 to 14, 2018. The IMO, considered to be branded as the “Olympics of math competitions,” is considered to be the most prestigious and the most difficult high school mathematics competition in the world for high school students.

Albert John Patupat of De La Salle University Integrated School led the way in capturing the country’s third gold medal. Previous IMO Gold Medalist Kyle Patrick Dulay of Philippine Science High School – Main Campus scored a silver medal this year. IMO first-time Emmanuel Osbert Cajayon of Emilio Aguinaldo College, along with veteran Shaquille Wyan Que of Grace Christian College, both secured Bronze Medals. Andres Rico Gonzales III of DLSU Integrated School and Sean Anderson Ty of Zamboanga Chong Hua High School each won an Honorable Mention Award.

Francisco Adajar of UP-Diliman. The Philippine participation to the IMO is jointly organized by DOST-SEI and the Mathematical Society of the Philippines (MSP).

**YES Awardees continue record-breaking numbers**

Now on its 11th year, the Youth Excellence in Science (YES) awards continues to show a steady increase in the total number of awardees each year. From recognizing 70 student-medallists when it was launched in 2007, the number of awards in 2018 reached 1,469 (from 332 schools) – the highest number recorded in YES history and a huge 23 percent increase from the previous year’s 1,195.

Among the 2018 awardees were 730 students from NCR who won in the 2018 International Science, Technology, Engineering and Mathematics (STEM) competitions. They received their YES medals from the DOST Secretary, while those from the various regions were recognized in special ceremonies organized by the various DOST Regional Offices.

DOST-SEI confers the YES Awards to winners of international Science, Technology, Engineering, and Mathematics (STEM) competitions that have been duly registered by national organizers such as Mathematics Trainer’s Guild (MTG) Philippines, Mathematics Development Academy of the Philippines (MDAP), Mathematical Society of the Philippines (MSP), Felta Multi-Media, Inc., Philippine Science High School System, Pinoy Robotics Team, Asian MathSci League, Inc. (AMSLI), and recently accredited local organizers/coordinators; Alexan Commercial, Samahang Piiska ng Pilipinas, and Kapisanang Kimika ng Pilipinas, Inc.
To keep the nation abreast of globalization, the Institute continuously promotes innovations in STEM teaching and learning, and implements inspirational and recognition programs that feed mainly to the development of expertise in key areas such as research, science, technology, and engineering across all regions.

But for us to truly address the technological divide, elevate standards in S&T education, and thus achieve inclusive progress, a more robust institutional framework—one that serves not only educators and students but all its stakeholders—must be established. As we strive to gain momentum locally and globally, the Institute helps the education sector and other industries competitively respond to advanced technologies by making innovation an integral part of our initiatives. This boosts our overall productivity and intellectual capacity, further gearing Filipinos up for the new industrial revolution.
Filipino Patriot Scholars Project marks Phase I accomplishments

The Filipino Patriot Scholars Project, which aims to sustain and broaden the engagement of DOST-SEI science scholars in achieving inclusive development and human security through service to community and country, completed its Phase I with notable accomplishments.

In 2018, a total of 2,340 beneficiaries served under the project, which was conducted in 10 regions, namely: Regions I, II, IV-A, VI, VII, VIII, IX, X, CAR and NCR. (See Figure 5):

FIGURE 5: Filipino Patriot Scholars Project Schedule of Activities

In pursuit of inspiring and fostering patriotism among the DOST-SEI scholars, different theoretical and practical activities have been introduced to broaden and deepen their engagement in national service. Part of the formation program is the community exposure trip to promote a sense of professional excellence, social responsibility and servant leadership through volunteerism, community engagement or civic responsibility, among others.

The year also marked the initial implementation of Phase 2 of the Patriot Project. The 4-day workshop on Comprehensive Community-Based Disaster Risk Reduction and Management (CBDRRM) Training was successfully concluded on July 28-31, 2018 for scholars in Visayas State University (VSU). This was initiated by the local government of Baybay City, Leyte in collaboration with DOST-SEI, DOST-VIII, and VSU for the benefit of 86 Leytean DOST scholars. Part of the objectives of the Phase 2 was to create a pool of patriot scholars service corps in every community to lead in conducting disaster preparedness.

New S&T scholars sign up under Bangon Marawi program

In response to the call to help rebuild and rehabilitate Marawi’s human and social infrastructures, DOST-SEI launched the Bangon Marawi Program in Science and Technology Human Resource Development (STHRD). The program focuses on providing scholarship benefits to students who are immediate members of the families affected and displaced from the communities by the armed conflict in 2017.

On January 16, 2018, SEI Director Josette T. Biyo signed a Memorandum of Agreement together with the President of MSU-Main Campus, Marawi City, Dr. Habib W. Macaayong and Chancellor of MSU-IIT, Iligan City, Dr. Sukarno D. Tanganal to implement the program. DOST Secretary Fortunato de la Peña and other school officials attended the ceremony and served as witnesses.

Scholarship opportunities in PH commence for CLM students

The Institute facilitated the provision for graduate scholarships of foreign nationalities from Cambodia, Lao PDR and Myanmar (CLM) under the Scholarship Offerings for ASEAN Researchers Program -- a first for Philippine education. Its objective is to promote and
capacitate the human resource development (HRD) for sustainable socio-economic development of the ASEAN region. With a P50 million implementation budget, the program started in 2017 with representatives from DOST-SEI, De La Salle University (DLSU), UP-Los Baños and UP-Manila visiting the CLM countries to interview the applicants on December 3-9, 2017.

Based on the interview and re-evaluation of their documents, 14 CLM students qualified for MS while four others qualified for Ph.D scholarships. Currently, 13 scholars are enrolled in Philippine universities, as follows (See Table 26).

To help the Cambodians adjust to their learning environment, owning to their difficulties using English in their schools and going through the congestion in Manila, DOST-SEI requested the Embassy of the Philippines in Cambodia and Myanmar to conduct an orientation for the scholars on the academic life of SEI's programs, policies and procedures. The activity aimed to establish a culture of ownership of SEI’s programs, policies and other resources, develop synergy between various divisions, and realign as well as develop new programs to further refine the direction of the organization.

The training team of Dr. Segundo Joaquín Romero, Jr. of Ateneo de Manila University facilitated the conduct of workshop activities that included stakeholders' analysis, mind mapping, organizational map (human resources), logistics map (material resources), project brief, projects work program, operations work program, SWOT and TOWS Matrices, strategy mapping, logical frameworks and performance dashboard.

**SEI conducts gender responsive activities**

In line with the PCW-NEDA-DBM Joint Circular No. 2012-01 on GAD, SEI provides opportunities to all Filipino citizens and adheres to the GAD Focal Point System (GFPS) to ensure these are given without gender bias, and with the aim to close the gender gap related to Science, Technology, Engineering and Mathematics. The GFPS is expected to lead in advocating, guiding, coordinating, and monitoring the development, implementation, review and updating of their GAD plans and GAD-related programs, activities and projects (PAPs). SEI-GFPS is now composed of the following:

**Gender-Fair Language orientation conducted**

To ensure that SEI employees eliminate gender stereotypes and use non-sexist language in the course of providing services to its clients and stakeholders, the Institute conducted a Gender-Fair Language Orientation entitled “Love in Many Languages” on February 14, 2018 at the NAST Auditorium. Dr. Odine de Guzman of the University of the Philippines Center for Women and Gender Studies was tapped as the Resource Person.

**Women’s Month activities held**

During the celebration of Women's Month in March, SEI commemorated the occasion by conducting a talk on Magna Carta for Women called “#JuanaSays.” Held on March 9, 2018 at the NAST auditorium, the talk was attended by the agency’s female personnel. This was to raise awareness among their employees on their legal rights as women in the family, society, and workplace. The forum was headed by Ms. Marita Castillo-Pimentel of the Philippine Commission on Women.

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**Table 26: Scholarship Offerings for ASEAN Researchers Program**

<table>
<thead>
<tr>
<th>NAME COUNTRY OF RESIDENCE COURSE EFFECTIVITY OF SCHOLARSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mr. Khin Thwin Than Myanmar PhD Civil Engineering Term 1 AY 2018-2019</td>
</tr>
<tr>
<td>2. Mr. Soeungmey Lay Cambodia MS Chemical Engineering Term 1 AY 2019-2020</td>
</tr>
<tr>
<td>3. Mr. Tin Thu Oo Myanmar MS Electronics and Communications Engineering Term 1 AY 2017-2018</td>
</tr>
<tr>
<td>4. Mr. Sushan Hmone Cambodia MS Environmental Engineering Second Semester AY 2018-2019</td>
</tr>
<tr>
<td>5. Mr. Sophon Naiw Cambodia MS Energy Engineering First Semester AY 2018-2019</td>
</tr>
<tr>
<td>6. Mr. Tin We Kong Myanmar PhD Genetics First Semester AY 2019-2020</td>
</tr>
<tr>
<td>7. Mr. Khin Hnin Yu Myanmar PhD Biotechnology First Semester AY 2019-2020</td>
</tr>
<tr>
<td>8. Mr. Kyaw Myo Thant Myanmar MS Environmental Science First Semester AY 2018-2019</td>
</tr>
<tr>
<td>9. Mr. Phyu Ma Hlaing Myanmar MS Biotechnology First Semester AY 2019-2020</td>
</tr>
<tr>
<td>10. Mr. Zazer Sae Myanmar MS Biotechnology First Semester AY 2018-2019</td>
</tr>
<tr>
<td>11. Mr. Naikhit Kha Cambodia MS Public Health (Nephrology) Second Semester AY 2017-2018</td>
</tr>
<tr>
<td>12. Mr. National Kha Cambodia MS Clinical Medicine (B-MTH) Second Semester AY 2017-2018</td>
</tr>
<tr>
<td>13. Mr. Sanee Nann Cambodia MS Public Health (Environmental Health) Second Semester AY 2017-2018 but as SOR for AY 2019-2019</td>
</tr>
</tbody>
</table>

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**Table 27: SEI-GFPS Members**

<table>
<thead>
<tr>
<th>NAME</th>
<th>Position</th>
</tr>
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<tbody>
<tr>
<td>Dr. Suyet E. Blus</td>
<td>Chairperson</td>
</tr>
<tr>
<td>Engr. Albert C. Muria</td>
<td>Member</td>
</tr>
<tr>
<td>Ms. Luis C. Minin</td>
<td>Member</td>
</tr>
<tr>
<td>Dr. Huly K. Chinnab</td>
<td>Member</td>
</tr>
<tr>
<td>Ms. Yuly O. Luna</td>
<td>Member</td>
</tr>
<tr>
<td>Mr. Mark Ivan C. Roblas</td>
<td>Chairperson and GAD Technical Working Group (GWG) Chairperson</td>
</tr>
<tr>
<td>Mr. Mark Ivan C. Roblas</td>
<td>Chairperson and GAD Technical Working Group (GWG) Chairperson</td>
</tr>
<tr>
<td>Mr. Lim Z. Lin</td>
<td>Member</td>
</tr>
<tr>
<td>Mr. Jauria T. Minna</td>
<td>Member</td>
</tr>
<tr>
<td>Ms. Pascale M. Toreno</td>
<td>Member</td>
</tr>
<tr>
<td>Ms. Peter Gerty F. Guarnia</td>
<td>Member</td>
</tr>
<tr>
<td>Ms. Aikkle P. Gocas</td>
<td>Member</td>
</tr>
<tr>
<td>Ms. Cesarina Wedle I. Wua</td>
<td>Member</td>
</tr>
</tbody>
</table>

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**SEI-GFPS reconstituted**

The GFPS is an interacting and interdependent group of people mandatory in all government agencies tasked to catalyze and accelerate gender mainstreaming within the agency. The GFPS is expected to lead in advocating, guiding, coordinating, and monitoring the development, implementation, review and updating of their GAD plans and GAD-related programs, activities and projects (PAPs). SEI-GFPS is now composed of the following:
The Department of Science and Technology-Gender and Development (DOST-GAD) Office spearheaded the 2018 Women’s Month Celebration. Various employees of SEI attended the event held last March 21, 2018 at the Philippine Science High School Gymnasium in Quezon City.

Gender Summit 15 participation

During the global Gender Summit 15 held in London, England on June 18-19, 2018, SEI sent its GFPS Technical Working Group Chairperson, Mr. Mark Ivan Roblas, to attend and present his paper entitled “Through the Looking Glass: Science Explorer Modules as a Communication Approach to Promote STEM Career”. Mr. Roblas was one of the speakers during the parallel sessions.

Gender Sensitivity Training for employees

On June 21-22, 2018, the GFPS initiated a Gender Sensitivity Training for SEI Employees at the Bayleaf Hotel, Intramuros, Manila. Attended by 14 employees, the training was conducted by Ms. Marita Castillo-Pimentel, a member of the Philippine Commission on Women Resource Pool.

Notable women of STEM on Women Forum

Seeking to address the global issue on the gap in representation of women in the fields of Science, Technology, Engineering and Mathematics (STEM), the Gender and Development Efforts of SEI (GAD-ES) organized a “Women Inspiring Women Forum” which was attended by female junior high school and college students around Metro Manila. Held last August 16, 2018 at the PICC on Pasay City, the forum was attended by three well known women in the fields of STEM: Material Engineer, Engr. Myra Ruth Pablete; Medical Physicist, DOST-Scholar and Miss Earth 2017, Ms. Karen Basco; and 2017 Junior Breakthrough Challenge Winner and Philippine Science High School (Eastern Visayas Campus) Alumna, Ms. Hillary Andales.

Philippine Business Education (PBE) partnership

The SEI GFPS tied up with the Philippine Business for Education (PBE) for its STEMpower Our Girls Initiative. This is a new social impact program that seeks to solve the low number of female scientists within the country.

The Institute provided PBEd a list of female STEM professionals tasked to conduct their Career Caravans and Industry Talks (CC/IT) in Cebu and Manila in November 3, 10 and 24, 2018. The following were invited to the occasion: Ms. Ger Anne Duran, Ms. Hillary Andales, Ms. Maxine Prado, Ms. Pamela Tolentino, Ms. Iris Bullozos, and Ms. Michelle Manglicmot.

Campaign Against Violence Against Women Orientation held

Gender and Development Secretariat Ms. Czarina Ysabelle L. Wu attended the DOST-organized orientation on Anti-Violence Against Women and Children (RA 9262) last December 12, 2018 at the Metal Industry Research and Development Center (MIRDC). This was in observance of the 18-Day Campaign to End Violence Against Women (VAW) 2018 with the theme: “VAW-free Community Starts with Me”.

Harmonized Gender and Development Guidelines shared

On June 26-27, 2018, the DOST-GAD Central Office conducted a training workshop on the Harmonized Gender and Development Guidelines (HGDG), a tool developed by the National Economic Development Authority (NEDA) to aid agencies on how to integrate gender concerns in all programs and projects in their GAD Plan and Budget (GPB). This not only increases the utilization of their budget, it also increases the agency’s gender mainstreaming score.

Notable women of STEM on Women Forum

One of SEI GAD’s mainstreaming efforts is the dissemination of GAD-related IEC materials to its clients. To facilitate this, the GFPS partnered with Indie-Siyensya, DOST-SEI’s film making competition to promote STEM subjects, and disseminated a total of 500 GAD Kits during their film screening and awarding. Each GAD kit contains IEC materials endorsed by the Philippine Commission on Women on the following topics: Anti-Violence Against Women and their Children Act of 2004 (RA 9262), Anti-Trafficking in Persons Act of 2012 (RA 10394), Anti-Rape Law of 1997 (RA 8353) and Anti-Sexual Harassment Act of 1995 (RA 7877).

MIS Unit maps out digital transformation plan

The Management Information System Unit of DOST-SEI continues to lay the groundwork for the digitalization of the Institute’s processes and systems. From ensuring ICT literacy among SEI employees and providing fast and safe internet connection to digitizing documents and introducing an online scholarship application process, the Institute is bent on strengthening its services to deliver IR 4.0’s promise of speed, security, and ease of access.

Digitization of documents accelerated

The annual upsurge of hard copies of scholarship documents presents an archival challenge that is being addressed by the Digitization Project. In 2018, a total of 48,133 scholarship contracts and other project-related documentation were digitized, up by 18% from the 2017 attainment of 40,775 digitized documents. The Institute acquired a Network-Attached Storage server to store and share data more efficiently.
Online Application System launched

The Online Application System (OAS) successfully held its first run by serving thousands of applicants for the 2019 Undergraduate Scholarship Programs. One of the Institute’s milestone achievements in 2018, the system enabled applicants to secure appointment slots and upload copies of their documentary requirements in complete convenience electronically. DOST-SEI also set up computer kiosks at the main lobby for walk-in applicants.

Faster, more secure connection established

To accommodate the ever growing amount of data, provide more efficient service delivery, and support the increasing number of wireless devices connecting to the network, the Institute upgraded its internet connection from 30Mbps to 36Mbps, and installed 18 new wireless access points to improve Wi-Fi experience of SEI employees and guests. Power over Ethernet (PoE) Switches were also acquired for power efficiency and for effective and effortless installation of network connection.

To protect devices from malware, web threats, and malicious traffic when connected to the SEI Local Area Network, the Institute is now equipped with endpoint security software. Network security devices were also purchased to safeguard SEI’s website and Information Systems.

SEI continuously maintains and updates its website (www.sei.dost.gov.ph) to provide current, relevant, and accurate information on its programs and services while ensuring compliance with the DBM’s Transparency Seal requirement. The Intranet also benefited from the upgrades and resulted in improved internal information dissemination.

Full Budget Utilization reflecting achieved goals

In 2018, DOST-SEI was allotted P3.719B by the Department of Budget and Management. With incurred obligations totaling P3.718B, the Institute reported a 99.97% utilization rate as shown in page 112 (Statement of Allotment & Obligation Table).

ICT literacy for SEI staff conducted

To increase its employees’ awareness of ICT capabilities, SEI conducted an orientation on SEI Network Infrastructure, Computer Security and IP Phone System, Back-up of Critical Files and Updates on Procedures Manual on Corrective Maintenance on December 10-11, 2018. Employees attended lectures on Social Engineering, phishing/email attacks, USB attacks, malicious websites, and other data breaching techniques. They were also taught how to use strong passwords to protect their computers, and encouraged to back-up critical files for business continuity. An initial presentation of the IP Phone system for the Institute’s ICT Communication System Plan was also conducted.

The Management Information System Unit (MISU) also led an audit of all ICT devices connected to SEI Local Area Network in accordance with the Preventive Maintenance Plan for the year to ensure that all units connected to the network are in good working condition and complying to the Institute’s ICT network policy.

Ongoing Network Infrastructure Development

The Institute continued its expansion of the network infrastructure by opening a new building, Engineering, Science, and Technology (EST) Building. In the new building, the Network/broadband Access Point (WAP) and Power Switch were installed to improve the Wi-Fi, the power delivery, and enable smooth networking and easy deployment of network devices within the building.

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STATEMENT OF ALLOTMENT & OBLIGATIONS

(Amount In Thousand Pesos)

<table>
<thead>
<tr>
<th>PS</th>
<th>MOOE</th>
<th>CO</th>
<th>TOTAL</th>
<th>% Utilisation</th>
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<tr>
<td>Allotment</td>
<td>Obligation</td>
<td>Allotment</td>
<td>Obligation</td>
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<td>General Administration and Support Services</td>
<td>22,428</td>
<td>22,285</td>
<td>4,572</td>
<td>4,455</td>
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<td>OPERATIONS</td>
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<td></td>
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<td>Development and Administration of S&amp;T Scholarship Programs, Awards and Grants for GRADUATE Level</td>
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<td>1,998</td>
<td>1,890,924</td>
<td>1,890,749</td>
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<td>Total Budget</td>
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<td>44,534</td>
<td>3,670,191</td>
<td>3,669,270</td>
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BUDGET DISTRIBUTION

(Amount In Thousand Pesos)

<table>
<thead>
<tr>
<th>Operations</th>
<th>GASS</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,687,064 (99.15%)</td>
<td>31,617 (0.85%)</td>
<td>4,877 (1.33%)</td>
</tr>
</tbody>
</table>

Per Major Expense Class and Major Final Output

- Operations: 3,687,064 (99.15%)
- GASS: 31,617 (0.85%)
- PS: 44,534 (1.19%)
- CO: 4,877 (1.33%)

- MOOE: 3,669,270 (98.68%)
JOSETTE T. BIYO, PH.D.
Director

ENGR. ALBERT G. MARÍN, MTM
Deputy Director

RUBY R. CRISTOBAL, PH.D.
Chief, Science and Technology Manpower Education Research and Promotions Division

RUBY CAROLIZA D. LAÑA, MIT, MOS
Chief, Science Education and Innovations Division

LUZ S. RIMORIN, MPA
Chief, Finance and Administrative Division
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BRENDA Y. BAUTISTA
Members
MANDATE PER EO 128

- Undertake science education and training;
- Administer scholarships, awards and grants;
- Undertake science and technology manpower development; and
- Formulate plans and establish programs and projects for the promotion and development of science and technology education and training in coordination with DepEd, CHED and other institutions of learning.

VISION

DOST-SEI shall develop the country’s human resource capacity in science and technology required to produce demand-driven outputs that meet global standards.

MISSION

DOST-SEI’s mission is to accelerate the development of S&T human resources of the country by administering undergraduate and graduate scholarships and advanced specialized trainings; promote S&T culture and develop innovative science education programs.

DEPARTMENT OF SCIENCE AND TECHNOLOGY
Science Education Institute

1F/2F Science Heritage Building
DOST Compound
General Santos Ave., Bicutan
Taguig City
www.sei.dost.gov.ph