DEPARTMENT OF SCIENCE AND TECHNOLOGY
SCIENCE EDUCATION INSTITUTE

PROGRESS
EDUCATION
SERVICE
SCIENCE
INNOVATION
PERSEVERANCE
EXCELLENCE

2022 ANNUAL REPORT

CHARTING OUR PROGRESS: NAVIGATING THE FUTURE

ABOUT THE COVER

In 2022, the Department of Science and Technology (DOST) initiated a message that encapsulates the essence of our vision and the diverse stakeholders we aim to serve. The cover design, featuring predominant blue and green colors, symbolizes stability, growth, and harmony, reflecting our commitment to a sustainable and prosperous future where Science and Technology play a central role. Within this design, the presence of a male graduate signifies our dedication to nurturing young minds and empowering them with the tools and skills to contribute to scientific advancements and drive progress.

Additionally, the image of a child represents our focus on inclusivity and the future generations, ensuring equal access to education, innovation, and opportunities for a better future. Furthermore, the researcher depicted in the cover embodies our pursuit of knowledge, innovation, and cutting-edge discoveries, encouraging exploration and breakthroughs.

Interspersed in this tableau is the image of a teacher, embodying the foundation of knowledge dissemination and mentorship. Their presence signifies our acknowledgment of the crucial role educators play in molding the future by instilling values, fostering curiosity, and guiding individuals on their journey of discovery and innovation. The presence of a female analyst symbolizes the importance of diverse perspectives and gender equality in the field of science and technology, promoting an inclusive environment that empowers women to excel as leaders, researchers, and innovators. Collectively, these images on the cover portray the DOST's dedication to collaboration, innovation, and the shared responsibility of charting progress. By harnessing the expertise and passion of individuals from different backgrounds, we navigate the challenges of the future and build a society grounded in knowledge, empathy, and sustainable development.

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INTRODUCTION

Overview on the theme

The theme *"Charting Our Progress: Navigating the Future"* in the context of the Department of Science and Technology (DOST) underscores the agency's commitment to driving innovation, research, and technological advancements to propel the Philippines towards a prosperous and sustainable future.

As the country's primary government agency for Science and Technology, the DOST plays a crucial role in addressing the challenges and opportunities that lie ahead. The theme highlights the importance of charting a strategic path and navigating through the complexities of the future, leveraging science and technology as key enablers.

Under this theme, the DOST aims to foster collaboration and partnerships among various stakeholders, including government agencies, academic institutions, industry players, and the general public. By working together, sharing knowledge and resources, and aligning efforts, the DOST seeks to maximize its impact and drive progress across different sectors of society.

The theme also emphasizes the significance of innovation and research in shaping the future. The DOST encourages the development and utilization of cutting-edge technologies, the exploration of scientific frontiers, and the promotion of research and development activities. By investing in scientific research and fostering an environment conducive to innovation, the DOST aims to drive economic growth, enhance competitiveness, and improve the overall quality of life for Filipinos.

Within the theme *"Charting our Progress: Navigating the Future,"* the DOST acknowledges the importance of adapting to rapidly changing trends and challenges. This includes embracing emerging technologies, such as artificial intelligence, robotics, biotechnology and renewable energy, to address pressing issues like climate change, healthcare, agriculture and disaster resilience.

The DOST recognizes the need to stay at the forefront of these advancements and navigate the evolving landscapes to ensure the country's sustained progress.

Moreover, the theme highlights the DOST's commitment to inclusivity and equity. The agency aims to ensure that the benefits of scientific and technological advancements reach all segments of society, including marginalized communities. By promoting accessibility, equal opportunities, and social inclusion, the DOST endeavors to bridge the digital divide and reduce disparities in access to science, technology, and innovation.

The DOST, under the theme *"Charting Our Progress: Navigating the Future,"* also emphasizes the importance of international collaboration and partnerships. Recognizing that global challenges require collective actions, the DOST aims to foster global cooperation, exchange scientific advancements, and position the Philippines as an active player in the global science and technology arena.

In summary, the theme *"Charting our Progress: Navigating the Future"* within the Department of Science and Technology (DOST) underscores the agency's commitment to driving scientific and technological advancements. It highlights the importance of collaboration, innovation, research, and adaptability in addressing challenges and seizing opportunities. By charting a strategic course, fostering inclusivity, and engaging in international partnerships, the DOST aims to navigate the future and contribute to the overall progress and development of the Philippines.

Message from the
DOST SECRETARY

I am honored to address you today as the Secretary of the Department of Science and Technology (DOST). With great enthusiasm and dedication, we embark on a collective journey to chart our progress and navigate the future, guided by the power of science and technology.

As we face unprecedented challenges and opportunities, it is crucial that we come together, united in our mission to drive innovation, research, and sustainable development. The theme *"Charting our Progress: Navigating the Future"* encapsulates our shared commitment to harnessing the transformative potential of science and technology for the betterment of our nation.

At DOST, we recognize the pivotal role that each of you plays in our pursuit of progress. Our success lies in forging strong partnerships with government agencies, academic institutions, industry leaders, and the broader community. Together, we can leverage our collective expertise, knowledge and resources to overcome barriers, create innovative solutions and pave the way for a brighter future.

Under this theme, we reaffirm our dedication to fostering a culture of innovation. We will continue to invest in cutting-edge-technologies, promote research and development, and encourage entrepreneurship. By nurturing a vibrant ecosystem for scientific exploration and technological advancements, we will drive economic growth, enhance competitiveness, and improve the quality of life for every Filipino.

In our pursuit of progress, we remain steadfast in our commitment to inclusivity and equity. We will ensure that the benefits of science and technology reach all corners of our society, leaving no one behind. Through targeted initiative, we will bridge the digital divide, empower marginalized communities, and promote equal opportunities for all.

Furthermore, the theme reminds us of the importance of adaptability and resilience. The world is evolving at an unprecedented pace, presenting us with both challenges and possibilities. We will embrace emerging trends, such as artificial intelligence, robotics, and renewable energy, to address pressing issues like climate change, healthcare, agriculture, and disaster resilience. By charting our course with agility and foresight, we will navigate through uncertainty and emerge stronger.

Collaboration knows no boundaries, and our dedication extends beyond national borders. We will actively engage in international partnerships, fostering knowledge exchange, and strengthening global cooperation. As industry leaders, we will position the Philippines as a respected player in the global science and technology community.

In closing, I invite you all to join hands and embark on this journey with us. Together, we can chart our progress and navigate the future, guided by the principles of friendship, collaboration, and innovation. Let us embrace the challenges, seize the opportunities, and empower our nation through the transformative power of science and technology.

Thank you for your unwavering support, and I look forward to our shared accomplishments as we shape a prosperous and sustainable future for the Philippines.

Mabuhay!

DR. RENATO U. SOLIDUM JR.
DOST Secretary

Message from the

SEI DIRECTOR

Dear stakeholders and partners, I am delighted to present to you the annual report of the Department of Science and Technology — Science Education Institute (DOST-SEI) for the year 2022. Under the theme *"Charting our progress: Navigating the future,"* this report highlights our journey towards shaping a brighter future through transformative science education.

In line with our vision, we have set out on a mission to chart our progress and pave the way for a future defined by knowledge, innovation, and sustainable development. As we navigate through the challenges and opportunities ahead, we remain committed to empowering students, educators, and researchers to become agents of change in the scientific landscape.

Throughout 2022, we have made significant strides in fostering a scientifically literate society. Through our scholarship programs, we have charted the progress of countless young minds, providing them with the necessary support to pursue their scientific aspirations. By investing in their education, we empower them to navigate the future with confidence, unlocking their potential to drive innovation and contribute to our nation's growth.

Furthermore, our efforts to enhance science education have focused on navigating the changing educational landscape. We have embraced emerging technologies, developed innovative teaching methodologies, and collaborated with educational institutions to equip our educators with the tools needed to inspire and engage students. By charting this path, we enable a generation of learners who are equipped with skills and knowledge necessary to thrive in an ever-evolving world.

As we chart our progress, research and development play a pivotal role in navigating the future. In 2022, we have fostered a culture of scientific inquiry and exploration, encouraging researchers to push boundaries and uncover new frontiers. Through collaborative partnerships, we have navigated uncharted territories, addressing critical challenges and generating knowledge that shapes our collective future.

Amidst the uncertainties and complexities, we recognize that charting our progress requires collective action. We have engaged with stakeholders from various sectors, forging partnerships that enable us to navigate the future together. By collaborating with industry leaders, government agencies, and academic institutions, we harness the collective expertise, resources, and perspectives necessary to address complex scientific and educational challenges.

As we reflect on our achievements, it is important to acknowledge that the journey of progress and navigation is an ongoing one. We remain committed to charting our course, adapting to new landscapes.

Josette T. Biyo

DR. JOSETTE T. BIYO

SEI Director

HIGHLIGHTS

UNDERGRADUATE AND GRADUATE SCHOLARSHIP PROGRAMS

- A total of **45,024 undergraduate scholars** were supported by SEI in 2022, a remarkable **20% increase** from last year's total of **37,445.**
- Of the 104,220 senior high school students who applied for the 2022 DOST-SEI Undergraduate Scholarship Program, **10,487 students were selected.** Additional 513 were considered potential qualifier.
- **1,804 total qualifiers** to the 2022 Junior Level Science Scholarship Program were announced in leading newspapers and SEI's official website. Additional 164 were considered potential qualifiers to the program.
- The S&T E-Scholarship Application System for the 2023 DOST-SEI S&T Undergraduate Scholarship Program was launched on September 19, 2022 and amassed a total of **145,104 applications.**
- The Capacity Building Program in Science and Mathematics Education (CBPMSE) supported a total of **1,197 scholars, 773** of which are MS and **424** PhDs.
- Through the Accelerated Science and Technology Human Resource Development Program (ASTHRDP), SEI supported **2,692 graduate scholars** in 2022.
- **21** applications of ASTHRDP scholars were approved for a grant under the Research Enrichment Program in 2022.
- **10 qualifiers** for the 2022 Manila Economic and Cultural Office (MECO) – Taipei Economic and Cultural Office (TECO) Sandwich Scholarship Program (SSP) proceeded with the conduct of their sandwich program in Taiwan.
- A total of **954 MS and PhD scholars** in various engineering fields were monitored and supported under the Engineering Research and Development for Technology (ERDT).
- **Seven (7) ERDT scholars** were awarded grants under the Research Enrichment (Sandwich) Program to do part of their research abroad.
- A total of **271 Masters** and **44 Doctoral** scholars were supported by SEI under Project Science and Technology Regional Alliance of Universities for National Development (STRAND).
- **130** Career Incentive Program (CIP) Graduate Fellows were deployed to different DOST research institutions, other government research institutions, and university research facilities in 2022 where they contributed their knowledge and expertise.
- DOST-SEI awarded scholarships to **13 faculty members** of the PSU for the pursuance of MS and Ph.D. in energy-related degrees at the Universiti Teknologi Petronas in Malaysia under the Foreign Graduate Scholarship Program in Energy Related Fields.
- **Seven (7) scholars** were supported under the DOST-SEI-UAlberta S&T Graduate Scholarship Program, a program for the pursuance of graduate studies in priority S&T fields at the University of Alberta in Canada.
- A number of **21 ongoing scholars** were supported under the PhilFrance-DOST Fellowship Program for the pursuance of MS and Ph.D. in various public universities in France.
- The Filipino Patriot Scholars Project made unwavering efforts to promote patriotism, nationalism, and volunteerism among science scholars. These efforts included webinars, a special focus on Filipino culture, and the successful launch of the DOST-SEI Scholars Leadership Camp. Additionally, funding scholarship volunteering initiatives showcased the project's commitment to empowering scholars as active citizens contributing to national development. **A total of 10,016 participated in the various activities of the project.**

- The DOST-SEI's Bangon Marawi Program has committed to rebuilding the city by providing STEM scholarships to those affected by the 2017 siege. After five years, numerous scholars have graduated. The Learning Resource Center in MSU-Marawi continues to aid scholars in their academic endeavors. **A total of 496 scholars have been awarded since program inception.**

- The Philippine government, through the DOST, supports the ASEAN region with scholarships for young researchers from Cambodia, Lao PDR, and Myanmar (CLM). The program promotes human resource development, resulting in enhanced skills and career opportunities. **A total of 41 scholars supported under the program.**

EDUCATIONAL CONFERENCES

- **114** and **70 technical papers** were presented by the STEM teacher-scholars, in the oral and poster sessions, respectively, of the 8th National Research Conference in Science and Mathematics Education (NRCSME) last November 10-11, 2022. The conference was attended by **327 participants** from the CBPSME and **65** others from the STRAND.

- **495** ASTHRDP scholars and research advisers from consortium member universities gathered virtually for the 10th ASTHRDP Graduate Scholars Conference held virtually via Zoom and Facebook Live on 22-23 September 2022.

- During the 10th ASTHRDP Graduate Scholars Conference, a total of **69 MS** and **30 Ph.D.** scholars/scholar-graduates presented their research during the Parallel Oral Session and Poster Session for different categories.

- The ERDT Consortium conducted a technical sharing session in December 2021 attended by **246** scholars and faculty advisers from the eight consortium member universities. **405** students and faculty members were able to benefit from the free Ansys Training.

- A total of **479 participants** attended the 10th ERDT Congress conducted on 30 September 2022 at the SREDC Hotel Rembrandt, Tomas Morato Ave. The same was live streamed via Zoom Meeting App and YouTube Live.

- More than **900 students and academicians** from different colleges and universities all over the country attended the ERDT Thesis/Dissertation Writing Seminar 2022.

- **65** student—and teacher—campers from **16** public high schools in the province were taught about various concepts on hydrological cycle, and climate change as well as the importance of marine ecosystem and the services and benefits it provides to coastal communities during the 2022 Climate Science Youth Camp.

INNOVATIVE LEARNING SOLUTIONS

- From 2018 to 2019 and 2021 to 2022, the DOST-SEI was able to produce a total of **48 storybooks.** These storybooks were printed and disseminated to selected schools nationwide. A total of ten **(10) storytelling videos** were developed in 2022, in addition to the **eight (8)** previously made in 2021.

- Developed **three (3) Audio Visual Presentations (AVP)** showcasing all the innovative science education resources developed by the DOST-SEI through the Promotion of STEM Resources (PoSTER) Project.

- The 21st CLEM, equipped with education and information communications technologies, served as multimedia center where teachers at school adopters conducted audio, video and modules production to ensure continuity of education through distance teaching and learning and later transitioning to blended mode of instruction. To date, **twelve (12) school-adopters** of 21st CLEM can be visited.

- At least **35 print SIMATAR package copies** were distributed in November 2022. SIMATAR is a collection of SIMs transformed into comics illustrations with the virtual simulations of select drawings to enrich experience and assist in learning concepts through printed resources.

- **Six (6) more modules** were added to the previously developed **seven (7)** modules, which complete the package of **thirteen (13)** modules of Virtual Laboratory Application in Science (VLAS) using three-dimension (3D) and 360-degree setup.

- The Science Explorer project continued to bring STEM closer to the youth through the conduct of **nuLab: STEM in Motion Roadtrips reaching 815 students** from public high schools in the various municipalities of the regions. **15 new Radyoeskwela and 15 Tuklasiyensya sa Eswkela STEM video Season 2 episodes** were also produced and promoted in the various radio networks of the country and online media platforms.

HUMAN RESOURCE DEVELOPMENT INITIATIVES

- **1,388 teachers attended via face-to-face training** on the Regional Trainings on Designing Assessment activities for the Blended Learning in Science and Mathematics in the various regions. A total of **6,336 teachers participated the webinar series** on Content Enrichment in Science and Mathematics. These trainings of the Science Teacher Academy for the Regions (STAR) equipped educators with the knowledge and tools to create innovative activities to complement other pedagogical processes and update and refresh them on specific topics.

- **A total of 7,618 teachers were reached** by the various specialized trainings conducted of the STEM Teach Training Program where teacher-participants also **gained CPD points.** These teacher training interventions is one of the ways in accelerating S&T human resources of the country, as educators will also impart knowledge to the youth.

- Utilizing both digital and face-to-face caravans, the project, dubbed as *"#PUSH4Science: Maging DOST Scholar Ka,"* was able to conduct online campaigns and direct/in-person campaigns, and produced several Information Education and Communication (IEC) collaterals to promote the DOST-SEI's flagship program engaging **more than 500 students and teachers.**

- **Launched a STEM Career Guidebook** during the National Science and Technology Week (NSTW) Celebration in November 2022 as part of the campaign materials in promoting STEM among aspiring scholars. The guidebook provides a clear picture on the various career opportunities in STEM, based on the priority programs of the DOST Undergraduate and Graduate Scholarships.

- DOST-SEI had its **second update of the publication, *"Human Resources in Science and Technology Resources in the Philippines"*** which highlighted the discussion of the difference between the HRST Workforce, which is the set of workers in the field of Science and Technology, and the HRST Stock, which includes those with college education in the field of Science and Technology.

NATIONAL AND GLOBAL COMPETITIONS

- **Six (6) Filipino students** took home two bronze medals and four honorable mentions at the 63rd International Mathematical Olympiad, which was held in-person for the first time after two years.

- Winning **three (3) bronze medals** and a merit citation were the delegates to the 33rd International Biology Olympiad (IBO), which was held in Yerevan, Armenia last July 10-18. This is the biggest haul of medals for the country since joining the IBO in 2018.

- **Two (2) Philippine delegates** both won bronze medals in the 54th International Chemistry Olympiad (IChO) held in Tianjin, China last July 10-18 and other teammates secured honorable mentions to cap the event. Another **two (2) delegates** also brought home a bronze medal and an honorable mention in the 52nd International Physics Olympiad (IPhO), which was held online last July 10-17.

- The NOI.PH Finals was participated in by the **top 29 contestants** that emerged from the eliminations. They each solved four challenging programming tasks in each day's five-hour session.

- The Philippines continues to gain recognition internationally, with students from different regions of the country securing a total of **5,060 gold, silver, and bronze medals** in 2021. As of the activities of NSTW, DOST-SEI presented **1,802 YES medals** to elementary and high school students who have excelled in international science, technology, engineering, and mathematics (STEM) competitions, either as

individuals or as part of a group. The awardees hailed from various regions across the country.

- **Three (3) winning schools** were awarded for the 5th cycle of the imake.wemake: create.innovate. collaborate competitions which was launched in August 2021. eves Pastor Memorial – Dumaguete Science High School. Their projects aimed to address important community issues by providing innovative solutions, such as promoting high-quality eye care, monitoring, and preserving the Philippine Eagle, and providing medical assistance in remote geographically isolated areas.

- **Six (6) total winners** were awarded out of the **267 entries received** for the Indie-Siyensya Filmaking Competition both for the Open and Youth Category.

- The Tagisang Robotics Competition converted to an all-girls competition dubbed as ***"Tagisang Robotics Competition: Girls and Gears,"*** **aiming to help close the gender gap of S&T workers** in the country and encourage more women to be interested in the field of ICT, mainly in robotics and programming.

- InnoBox, the Search for the Most Innovative Teaching and Learning Resources in Science and Mathematics yielded **106 entries,** from 90 high schools and 16 elementary schools where five (5) finalists were chosen from elementary and six (6) from high school.

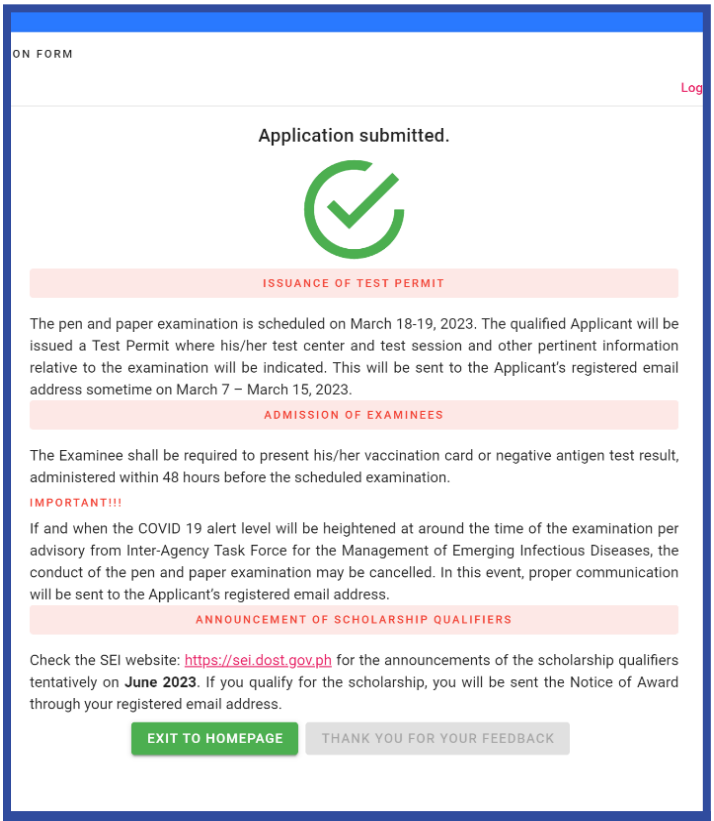
- Out of the 78 nominations for the 2022 Search for the Brightest STAR, **two (2) public teachers** were awarded for their exemplary work in STEM education with K-12 students during the Brightest STAR Awarding held on November 17, 2022.

SECTION

01

SETTING SAIL FOR SUCCESS: PIONEERING THE FUTURE

S&T UNDERGRADUATE SCHOLARSHIP PROGRAMS



The e-Scholarship Application System

There is no doubt that Information and Communication Technology (ICT) has played an essential role during the onslaught of the COVID-19 pandemic. As we have been forced to experience the new normal, where onsite and virtual lives merged, the Department of Science and Technology - Science Education Institute's (DOST-SEI) Management Information System Unit (MISU) has been pushed into high gear to accommodate the sudden demand for the use of ICTs. A structured recalibration of the unit's efforts and plans has been made to improve the institute's quality service delivery and enhance its capabilities to connect with the public.

One of the successful transitions it has forwarded is the full implementation of the E-Scholarship Application System for the 2023 Undergraduate S&T Scholarships. Through this shift, applicants for DOST-SEI's Junior Level Science Scholarships, Bangon Marawi, and Undergraduate Scholarship Programs can now submit and upload their documentary requirements online via ***https://www.science-scholarships.ph.*** It has made the various scholarship opportunities offered by DOST-SEI more available and accessible to everyone.

NUMBER OF S&T SCHOLARS REACH NEW HEIGHTS

SEI supported 45,024 undergraduate scholars in 2022. This registered a 20% increase from the 37,445 scholars in 2021 and 349% over the last ten years. Of the total number of scholars supported, 17,514 are under the Republic Act 2067 (Merit) Scholarship Program which aims to identify, develop and nurture students with high aptitude in science and mathematics; 25,693 under the Republic Act 7687 or the *"Science and Technology Scholarship Act of 1994"* which aims to finance the education of poor, talented and deserving students desiring to pursue careers in the areas of STEM including science and mathematics teaching; and 1,817 under the Republic Act 10612 or the *"Fast-tracked Science and Technology Scholarship Act of 2013"* which aims to strengthen the country's science and technology education by fast-tracking graduates in STEM courses who shall teach STEM subjects in secondary schools throughout the country. Among the total number of scholars supported, 48% are male and 52% are female.

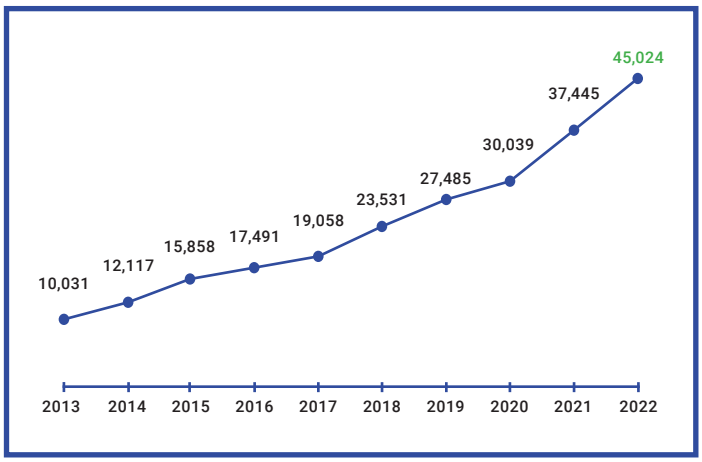


Figure 1. The steady increase in the number of scholars supported through the years shows the strong support of the government towards the development of S&T experts.

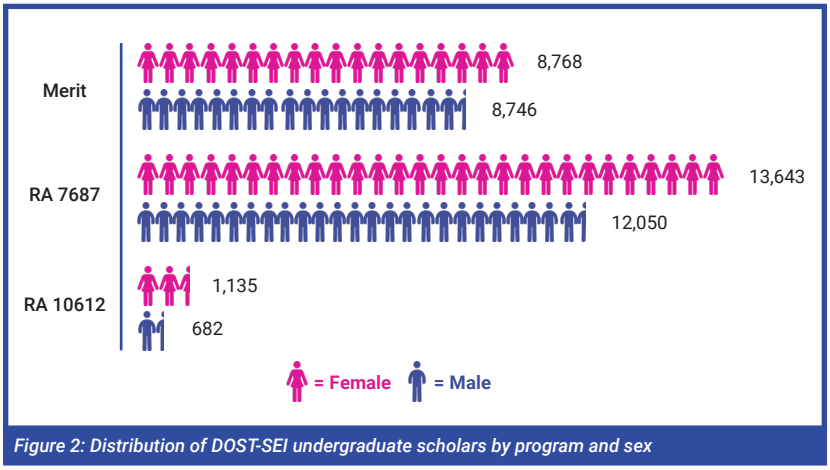
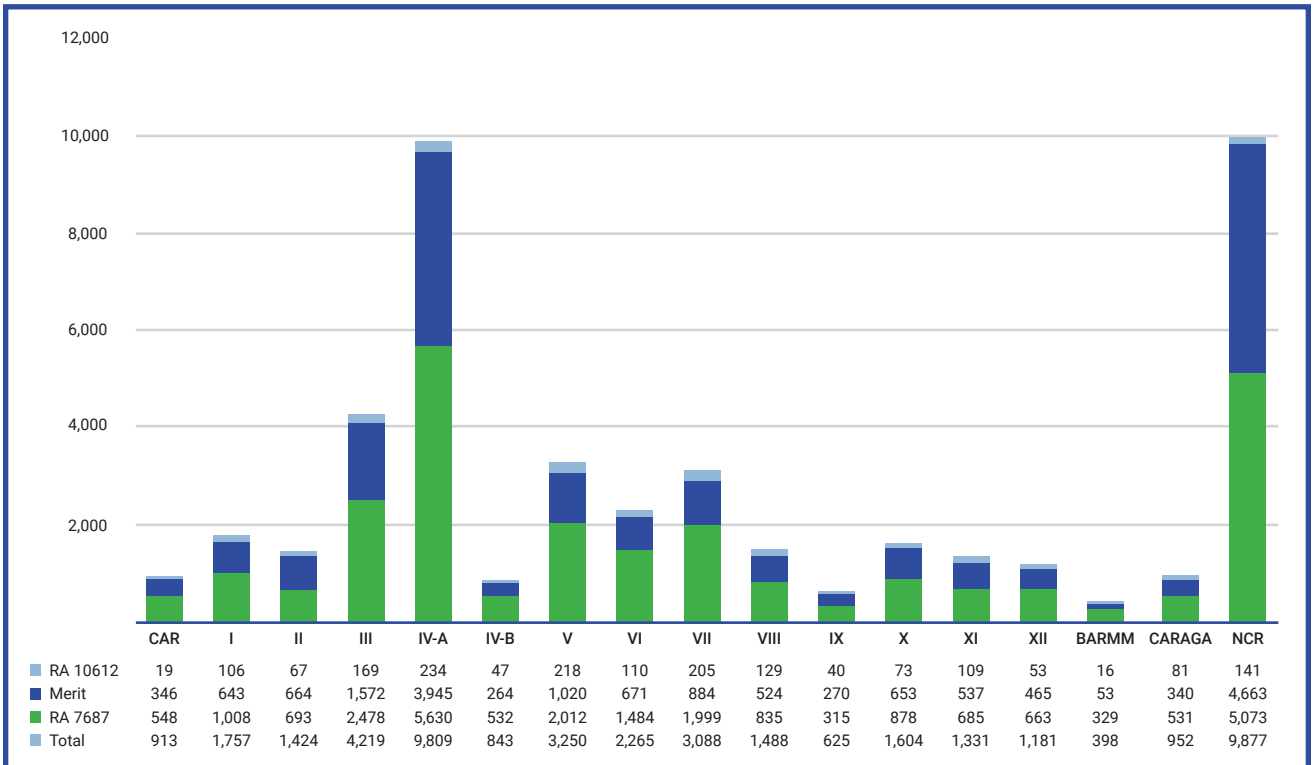


Figure 2: Distribution of DOST-SEI undergraduate scholars by program and sex

Section 10 of RA 7687 provides for the enlistment of two scholars by municipality and ten per congressional district without municipality. In 2022, 99% of the total municipalities have had S&T scholars. Among the regions, the National Capital Region had the greatest number of scholars at 9,877 followed by CALABARZON with 9,809 scholars and the Central Luzon Region with 4,219 scholars.



	CAR	I	II	III	IV-A	IV-B	V	VI	VII	VIII	IX	X	XI	XII	BARMM	CARAGA	NCR
RA 10612	19	106	67	169	234	47	218	110	205	129	40	73	109	53	16	81	141
Merit	346	643	664	1,572	3,945	264	1,020	671	884	524	270	653	537	465	53	340	4,663
RA 7687	548	1,008	693	2,478	5,630	532	2,012	1,484	1,999	835	315	878	685	663	329	531	5,073
Total	913	1,757	1,424	4,219	9,809	843	3,250	2,265	3,088	1,488	625	1,604	1,331	1,181	398	952	9,877

Figure 3: Distribution of the 2022 DOST-SEI Undergraduate Scholars by Home Region and Scholarship Program

SELECTION OF THE 2022 JUNIOR LEVEL SCIENCE SCHOLARSHIP QUALIFIERS

The Junior Level Science Scholarships (JLSS) is a program for incoming regular third year college students who are enrolled in priority science and technology courses. The JLSS has three component programs: a) RA 7687 program, which provides for socioeconomically challenged students; b) Merit program, which gives chance to students with high aptitude in STEM; and c) RA 10612, which aims to accelerate the production of science and mathematics teachers in secondary schools.

The qualifying examination held on August 27-28, 2022 in 99 test centers nationwide marked the resumption of the paper-and-pen selection of qualifiers after two year of hiatus due to COVID-19 pandemic. A total of 9,077 took the qualifying examination. Health and safety protocols were put in place to ensure the safety of both the examinees and testing personnel against the threat of COVID-19.

Conduct of the 2022 JLSS nationwide qualifying examination on August 22-28, 2022

On November 20, 2022, SEI announced the names of 1,804 qualifiers to the 2022 JLSS in leading newspapers and SEI's official website. Of the figure, 595 qualified under the RA 2067 (Merit) Program, 789 under RA 7687 Program and 420 under RA 10612 Program. There were 164 more potential qualifiers whose names did not appear in the published list pending submission of additional requirements for evaluation.

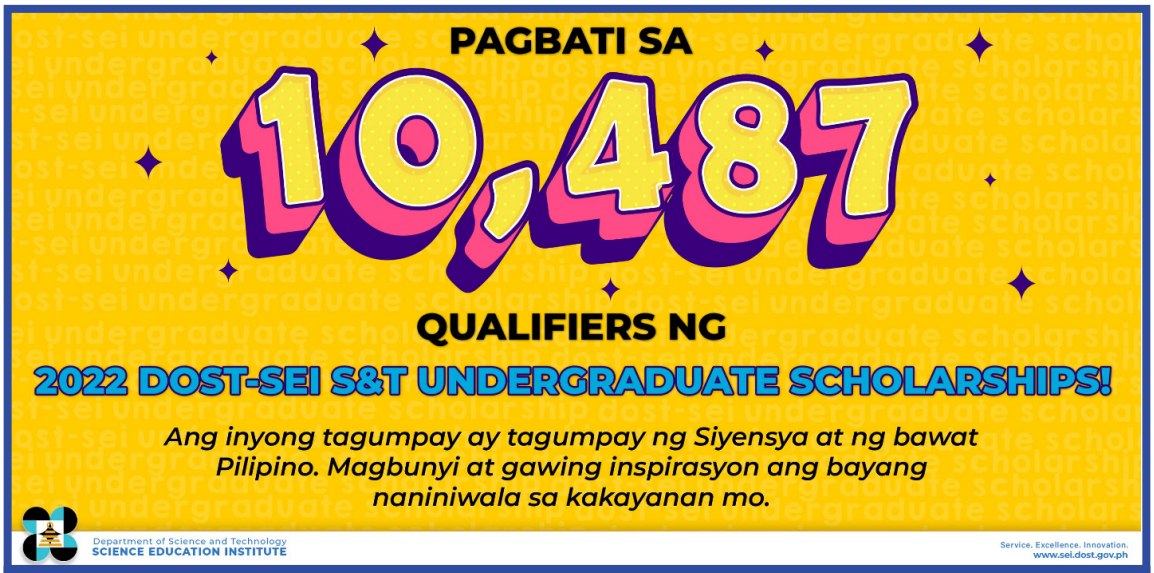
Snippet of the Open Forum component of the Orientation on the S&T Junior Level Science Scholarship Policies

On November 25, 2022, the NCR-based scholarship qualifiers and their parents attended the Virtual Orientation on Scholarship Policies and Procedures via Zoom platform. Qualifiers who signed the Scholarship Agreement officially became DOST-SEI scholars effective the First Semester of AY 2022-2023.

SELECTION OF THE 2022 S&T SCHOLARSHIP QUALIFIERS

A total of 104,220 senior high school students applied for the 2022 DOST-SEI Undergraduate Scholarship Program. For two consecutive years, DOST-SEI did not conduct the national scholarship qualifying examination due to the COVID-19 pandemic. The Institute employed data analytics and proxy indicators in identifying the qualifiers. Documentary requirements were collected through the E-Scholarship Application System including the students' grades in Grades 9-11.

Of those who applied, 10,487 students qualified for the scholarships. The list of qualifiers was announced in leading newspapers and posted in SEI's official website and Facebook page on June 12, 2022.



The banner announcing the 2022 DOST-SEI S&T Undergraduate Scholarship qualifiers in the SEI website and official social media accounts

Out of the total, 5,567 were RA 7687 Scholarship Program qualifiers while 4,920 qualified under the Merit Scholarship Program. There are 513 potential qualifiers whose names were withheld because some information/document in their application relative to their eligibility to the scholarship have to be revalidated. They were advised on the submission of these information/documents.

On July 7-8, 2022, NCR-based scholarship qualifiers and their parents attended the Virtual Orientation on Scholarship Policies and Procedures via Zoom platform. During the orientation, the terms and conditions of the S&T scholarships were discussed, while issues and concerns were clarified.

SEI posted a compilation of frequently asked questions with answers on its website and on the Scholar's Portal, an online platform designed to enable the scholarship qualifiers to download their personalized copy of the Scholarship Agreement, Letter for Enrollment or Endorsement Letter and LBP Letter of Introduction. A recorded video of the orientation was also uploaded on the portal, allowing all qualifiers and their parents to view or revisit parts of the orientation that they might have missed.

S&T E-SCHOLARSHIP APPLICATION SYSTEM: EASING THE PROCESS

The S&T E-Scholarship Application System for the 2022 Junior Level Science Scholarships debuted on June 9, 2022 and garnered a total of 19,046 applicants. Meanwhile, the S&T E-Scholarship Application System for the 2023 DOST-SEI S&T Undergraduate Scholarship Program was launched on September 19, 2022 received a total of 145,104 applications.

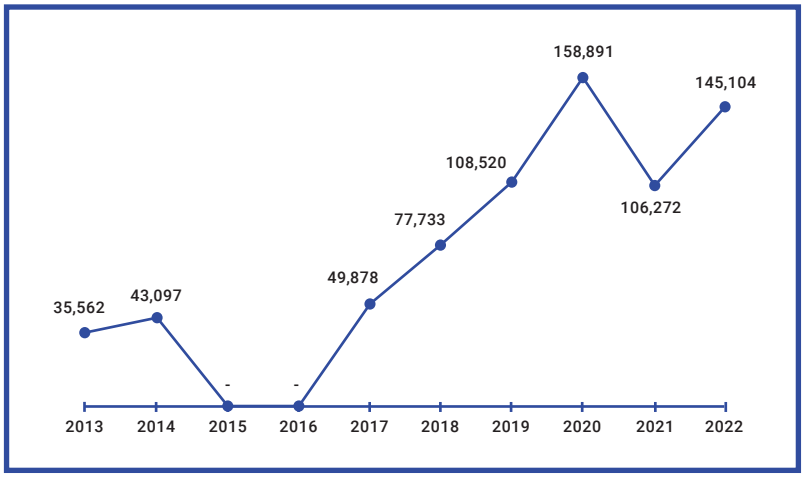
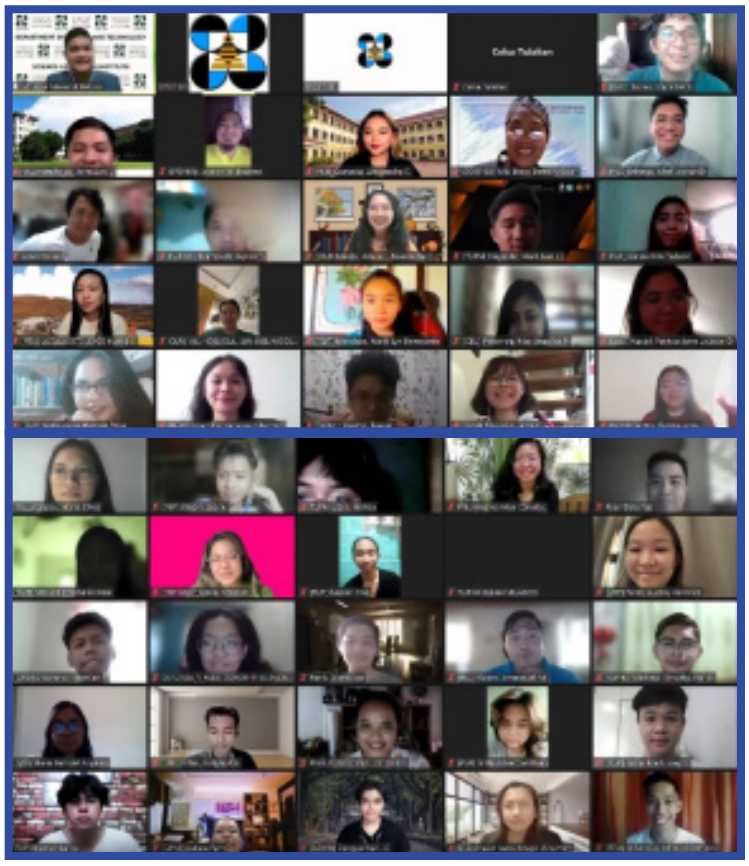


Figure 4: The data shows an annual rise in the number of applicants indicating that more students are interested in taking up careers in science and technology. In 2015 and 2016, no scholarship examination was conducted due to the DepEd transition to the K-12 Program.



EXIT CONFERENCE: RECONNECTING WITH GRADUATING S&T SCHOLARS

The fifth DOST-SEI NCR-Based Exit Conference was participated in by 1,377 graduating S&T scholars held on 18 March 2022 via zoom.

Group photo of the participants of the virtual exit conference.

SEI annually conducts the Exit Conference to re-orient scholars who are expected to graduate on the terms and conditions of the Scholarship Agreement specifically on service obligation and provide them information about S&T career opportunities and the DOST-SEI graduate scholarship programs.

SEI invited resource speakers from both private and government agencies to discuss topics that can be helpful to graduating scholars. For this year, Dr. Chris Monterola, a 1992 Merit scholar was invited to share his story and experiences. Dr. Monterola is the Head of Asian Institute of Management's Aboitiz School of Innovation, Technology, and Entrepreneurship.

Snippet on the presentation of Dr. Chris Monterola.

CAPACITY BUILDING PROGRAM IN SCIENCE AND MATHEMATICS EDUCATION (CBPSME)

As of 2022 a total of 1,197 (773 MS and 424 PhD) scholars were supported under the CBPSME.

STEM Education Graduate Scholars Conference

The 8th National Research Conference in Science and Mathematics Education (NRCSME) was held on 10-11 November 2022 at the Garden Orchid Hotel, Zamboanga City.

With the theme *"Re-defining the Future: Embracing the New Normal through Innovative STEM Education,"* the conference emphasized the need to attain quality STEM education in the new normal through quality STEM teachers and a supportive ecosystem. STEM educators and researchers were called upon to develop the capability of learners to develop foresight, anticipate change, grasp opportunities, cope with threats, and develop creative strategies. The STEM education scholars must lead in their respective regions, imbibed with at least some of the qualities of former leaders in STEM.

In his keynote address, DOST Secretary Dr. Renato U. Solidum Jr. cited the research and knowledge of scholars as significant contributions to the goals of DOST and the country for the future STEM education and an inclusive and engaging culture.

Putting emphasis on lifelong learning, Sec. Solidum stressed that focusing on skills rather than content enables the learners to adapt to the future. He also highlighted the cruciality of building learning communities; learning together and collaboration; and building learning connections with the world. Finally, he pointed out the necessity of creating a learning ecosystem promoting intellectual curiosity, thus supporting lifelong learning. For him, expanding the boundaries of the classroom leads to exploration, innovation, and development of skills needed to adapt to the future.

Dr. Kritsachai Somsaman, Deputy, Director for Administration and Communication Southeast, Asian Ministers of Education Organization Secretariat was Plenary Speaker 1 and he spoke about *"Building Collaborative Culture for STEM Education in Southeast."*

Dr. Somsaman's discussed the five strategies in the SEAMEO STEM-ED. These were:

1. **Develop SEAMEO STEM Quality Schools**
   - Working with NIE at Nanyang Technological University to create demonstration sites in Thailand.
   - Partnering with the Global STEM Alliance to create a STEM certification programme in the region.
   - Publishing profiles of the schools with high-quality STEM programmes.

2. **Strengthen Learners' Motivations, Aspirations, and Experiences**
   - Creating Career Academies in four areas of STEM employment
   - Developing a Career Academies programme in Vietnam

3. **Develop and promote innovative STEM learning resources and educational tools and platforms.**
   - Giving grants to universities to develop new STEM learning units that are highly interesting, user-friendly, and not costly. Fifteen units are now under review by expert science educators.
   - Partnering with some Korean companies that manufacture educational equipment and six units are being developed around these tools.

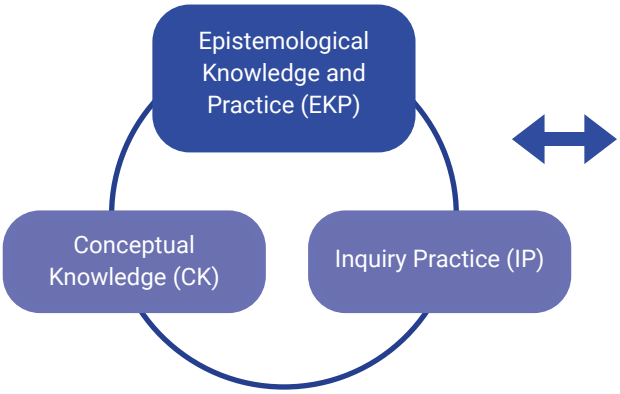
4. **Strengthen capacities of teachers and educational personnel with SEAMEO STEM education Professional Academy**
   - Establishing partnership with the University of Pennsylvania, the Teachers Council, Office of National Higher Education Science Research and Innovation Policy Council and Chevron Corporation

5. **Develop Evidence-based Policies and Programmes**
   - Conducting roundtables to bring researchers and policymakers together.
   - Training researchers to conduct studies suitable for systematic reviews.
   - Supporting systematic reviews of research.
   - Developing a *"What Works in Southeast Asia"* website.

Dr. Sheryl Lyn C. Monterola – National Institute for Science and Mathematics Education Development

(NISMED) Director and Plenary Speaker 2 discussed about *"Innovating STEM Teacher Capacity- Building, Creating our Preferred Futures."* She mentioned that to remain competitive, a nation needs STEM-capable workers at every education level. Teacher must be engaged with future oriented practices.

ENGAGE WITH



FUTURE - ORIENTED PRACTICES

- Activities to flesh out the future-oriented structure of scientific discourse, language and concepts.
- Activities inspired by the future studies or by the working life and societal matters.
- Exposure activities to enlarge the imagination about possible future STEM careers.
- Action competence activities.

The STEM teacher-scholars presented 114 and 70 technical papers in the oral and poster sessions, respectively.

The various researches and innovations developed or proposed to enhance STEM education opened many possibilities. The outputs of the scholars were very rich in new knowledge, teaching-learning innovations, and other STEM education-related aspects.

However, these were just initial steps towards attaining the goal of capacitating learners for the future. Translating them into relevant actions and practical solutions to the problems in the new learning environments will define the future and facilitate the learners' journey toward the multiple future scenarios imagined.

In this year's Conference, the research outputs were classified into 5 categories, with the breakdown of the papers presented, to wit:

Table 1. Number of Technical Papers presented during the 8th NRCSME

Category	Number of Technical Papers Presented	
	Oral	Poster
1. Conceptual Studies and Assessments	23	15
2. Learning Experiences and Teaching Strategies	44	21
3. Teaching Capacity Development	14	12
4. Instructional Material Development- Electronics Technology and Media Devices	19	12
5. Instructional Material Development – Print Materials and Other Resources	14	10

The participation and attendance of 327 participants (133 males; 194 females) from the CBPSME and 65 (32 males; 33 females) STRAND, i.e. scholars, CBPSME/STRAND Project Directors/staff, and faculty-research advisers, from the consortium universities suggest that access to connectivity that may cause challenges can always be managed when teachers are empowered through education in Science and Mathematics.

Table 2. Distribution of participants to the 8th NRCSME by university

Consortium University	No. of Participants
Ateneo de Manila University	18
Bicol University	30
Central Luzon State University	23
Cebu Normal University	7
De La Salle University	27
Leyte Normal University	5
MSU-Iligan Institute of Technology	30
MSU-Marawi	19
Mariano Marcos State University	16
Philippine Normal University	18
Saint Mary's University	15
University of San Carlos	25
UP Open University	10
UP College of Education	22
Western Mindanao State University	23
West Visayas State University	39
SEI Officials and staffs	12
DOST Regional Office 9	3
STRAND Participants	
Central Mindanao University	30
University of Southern Philippines	27
Nueva Vizcaya State University	8
TOTAL	**404**

The Conference serves as a venue that brings together all scholars from partner university institutions and provides a platform for professional interaction and intellectual exchanges among the participants.

Granting of Research Adviser's/Mentor's Incentive/Fee

In 2022, forty-two (42) masters thesis and four (4) doctoral dissertation advisers/mentors received incentives for helping their advisees in the conduct of researches until the submission of the final manuscripts needed to earn graduate and post-graduate degrees.

Dissemination Grant (DG) under the Student Research Support Fund (SRSF)

Table below shows the number of Dissemination Grants (DG) approved enabling scholars to participate in national/international conferences or get published in technical publications.

Table 3. List of Conferences attended and publications of CBPSME scholars

Title of Conference/ Date of Conference/ Venue of the Conference	No of Scholars Given the DG	University	Title of Conference/ Date of Conference/ Venue of the Conference	No of Scholars Given the DG	University
14th International Conference on Climate Change: Impacts and Response/7-8 April 2022/University of British Columbia, Vancouver, Canada	1	ADMU	4th International Research Conference on Multidisciplinary Education, Management and Administration Dec 16-19, 2022/ Bangkok, Thailand	2	WVSU
14th Asian Conference on Education (ACE 2022)/ November 28 – 1 December 2022 Toshi Center Hotel, Tokyo, Japan	2	MSU-IIT	Publication in the Journal Turkish Science Education	1	DLSU
5th International Meeting on STEM Education 2022 Malang, Indonesia	2	MSU-IIT	2022 International Conference on Educational Technology/25-27 June 2022 Beijing, China	1	
14th Asian Conference on Education (ACE 2022) November 28 – 1 December 2022 Toshi Center Hotel, Tokyo, Japan	4	DLSU	IAFOR Conference on Educational Research and Innovation (ERI2022)/ May 5-7, 2022 Virginia, USA	1	
30th Annual Philippine Biodiversity Symposium and Biodiversity Conservation Society of the Philippines (BCSP) General Assembly/6-9 December 2022 Butuan City	1				
Asian Conference on Education 2022 Nov 28, 2022-Dec 1, 2022/ Tokyo, Japan	1				
13th International Conference on E-Education, E-Business, E-Management, and E-Learning/14-17 January 2022 Tokyo, Japan	1	DLSU	International Academy Forum (IAFOR)/May 5-7, 2022 [Virtual] Virginia, USA	1	
14th Asian Conference on Education (ACE 2022)/ November 28 – 1 December 2022 Tokyo, Japan	1	MSU-MARAWI	26th IUPAC International Conference on Chemistry Education/July 18-22, 2022 Cape Town, South Africa	1	

Awardees in the In Touch with Excellence

One MS scholar who graduated with academic honors and 34 doctoral scholars who completed their degrees were recognized virtually during the 2022 In Touch with Excellence Award held on November 29, 2022.

New Academic Programs at MSU-IIT for CBPSME Scholars

A Technical Working Group of experts assessed the PhD in Science Education Majors in Mathematics and Biology programs of the Mindanao State University-Iligan Institute of Technology (MSU-IIT) for possible inclusion among the CBPSME priority fields of study. After due deliberation, MSU-IIT was given five scholarship slots for each program effective the First Semester of AY 2022-2023. The MSU-IIT announced the availability of scholarships in these two-degree programs. For AY 2022-2023, eight (8) Ph.D. in Science Education major in Biology were approved and two (2) were awarded PhD in Science Education major in Mathematics were approved.

Creation of Ad Hoc Committee to Assess the Impact of the CHED Memorandum Order (CMO) No. 15 Series of 2019 Re-Policies, Standards and Guidelines for Graduate Programs on the CBPSME

The CBPSME created an Ad Hoc Committee with some CBPSME Project Directors as members to study the CMO No. 15 and its implications on the CBPSME scholarship program. The Committee held a virtual meeting on August 8, 2022. It came up with recommendations on actions to be taken for consideration of the other graduate scholarship consortia and eventual position paper to be submitted to CHED.

ACCELERATED SCIENCE AND TECHNOLOGY HUMAN RESOURCE DEVELOPMENT PROGRAM (ASTHRDP)

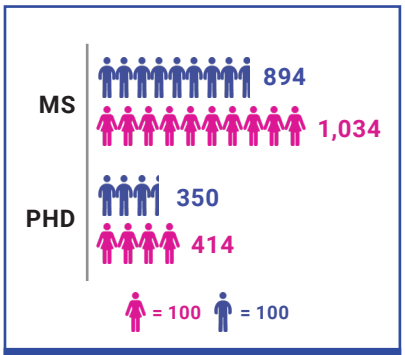


Figure 5. Distribution of Scholars Supported by Degree Level and Sex

Through the ASTHRDP, SEI supported 2,692 graduate scholars for 2022. Of this number, 46.21% are males and 53.79% are females.

In April 2022, SEI announced the availability of ASTHRDP graduate scholarships on its website. Applicants submitted printed copies or e-copies of their applications and other requirements through the consortium member-universities.

The DOST Secretary approved 115 MS and 20 Ph.D. qualifiers for the Second Semester of AY 2021-2022, and 301 MS and 82 Ph.D. qualifiers for the First Semester of AY 2022-2023. They were issued electronic copies of the notice of the award.

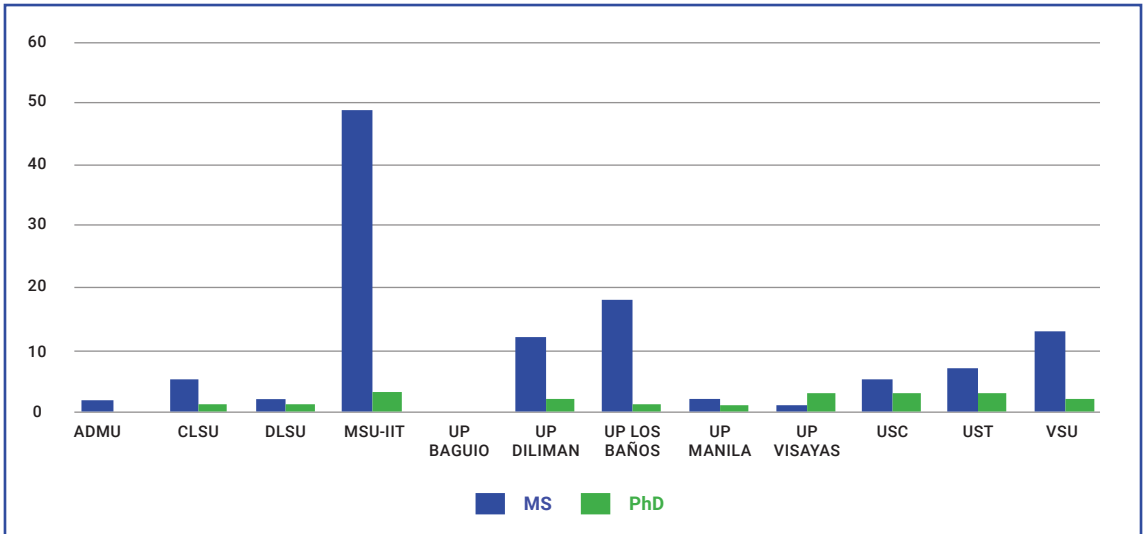


Figure 6. Distribution of ASTHRDP Qualifiers in the Second Semester of AY 2021-2022 by Degree Level and University

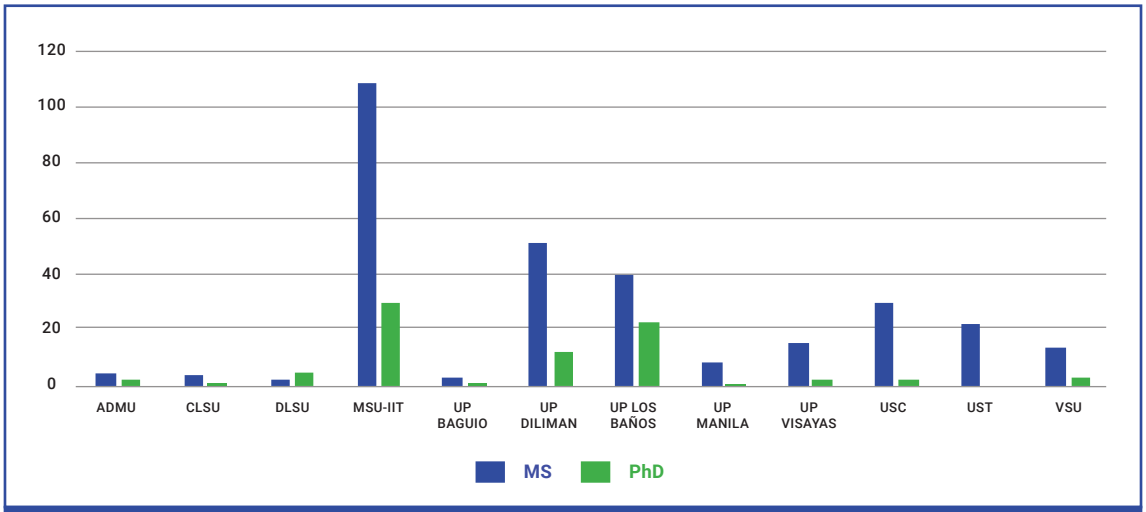


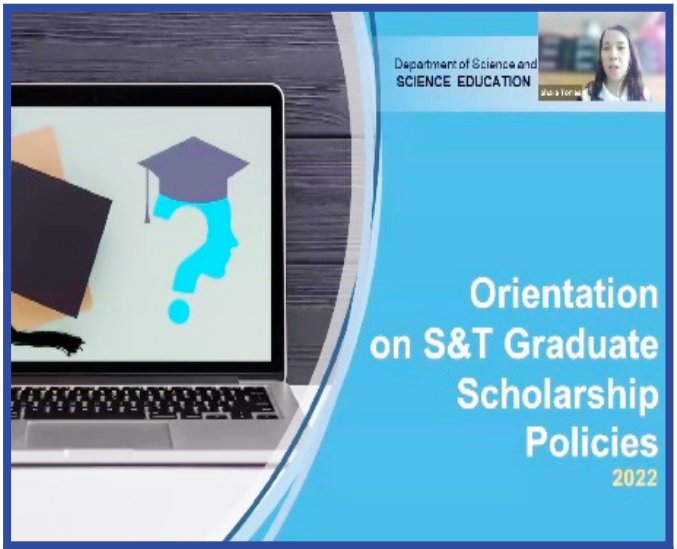
Figure 7. Distribution of ASTHRDP Qualifiers in the First Semester of AY 2022-2023 by Degree Level and University

Table 4. Schedule of Orientation of ASTHRDP Qualifiers

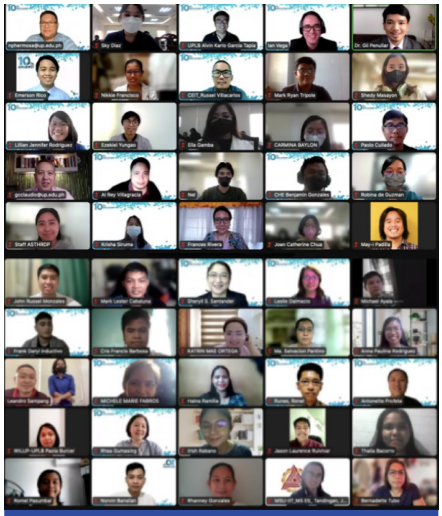
Date	Total no. of scholars who attended the Orientation
4 March 2022	127
24 October 2022	318

Orientation of ASTHRDP-NSC Batch 2022

The 2022 ASTHRDP qualifiers attended a series of virtual orientations via Zoom by batches, together with the ASTHRDP-NSC Project Leaders and university-based Project Staff.



Orientation on S&T Graduate Scholarship Policies held virtually via Zoom.



Attendees during the 2022 ASTHRDP Graduate Scholars Conference – Year 10, with the theme "ASTHRDP: 10 Years of Sustaining Excellence"

2022 ASTHRDP Graduate Scholars Conference – Year 10

The University of the Philippine-Diliman, in collaboration with UP Los Baños, hosted the 10th ASTHRDP Graduate Scholars Conference held virtually via Zoom and Facebook Live on 22-23 September 2022.

Some 495 ASTHRDP scholars and research advisers from the consortium member universities gathered virtually for the presentation of the research outputs of the former, held plenary talks and forged collaborations.

Dr. Josette T. Biyo delivered the Welcome Remarks while DOST Secretary Dr. Renato U. Solidum, Jr. gave the Inspirational Message.

The two-day conference featured plenary presentations by experts on topics related to pandemic response, preparedness/ readiness, response, and recovery.

Table 5. List of ASTHRDP Project Leaders who were recipients of Plaque of Appreciation

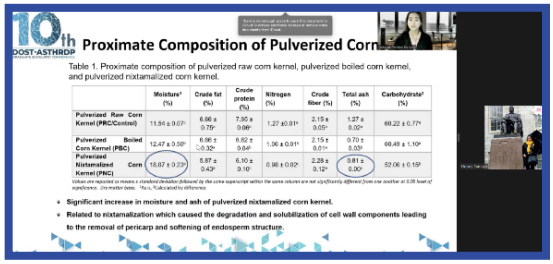
University	Project Leader	Number of Years Served as ASTHRDP Project Leader
ADMU	Dr. Fabian Dayrit	12
CLSU	Dr. Soledad Roguel	3
	Dr. Elaida Fiegalan	7
DLSU	Dr. Arlene Pascasio	3
	Dr. Glenn Alea	4
MSU-IIT	Dr. Ferdinand Jamil	3
	Dr. Mark Nolan Confesor	3
UP Diliman	Dr. Jose Maria Balmaceda	7
UP Los Baños	Dr. Jose Camacho Jr.	8
UP Manila	Dr. Nina Gloriani	3
UP Visayas	Dr. Ma. Luisa Mabunay	3
	Dr. Resureccion Sadaba	3
UST	Dr. Maribel Nonato	12
USC	Dr. Anthony Ilano	3
VSU	Dr. Victor Asio	12

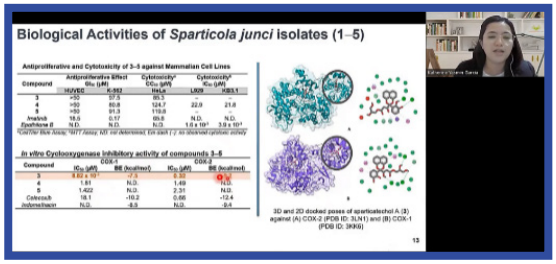
In commemoration of the 10th year of implementation of the ASTHRDP, 15 former and current ASTHRDP Project Leaders who have served for more than three years were recognized and presented a plaque of appreciation for their deep commitment and invaluable service during the Opening Program of the conference.

A total of 69 MS and 30 Ph.D. scholars/scholar-graduates presented their research during the Parallel Oral Session and Poster Session for the following categories:

1. Agricultural and Environmental Sciences
2. Biological and Health Sciences
3. Physical, Chemical, and Earth Sciences
4. Mathematical and Computational Studies

Twelve (12) winners each for the best oral and best poster presentations were awarded.





SEI provides grants for research and related activities

A. Student Research Support Fund (SRSF)

In addition to the regular financial assistance provided under the ASTHRDP scholarship, SEI also provides grants to the scholars under the SRSF: Dissemination Component, Research Grant and Mentor's Fee. A total of 174 requests for grant of scholars were approved in 2022.

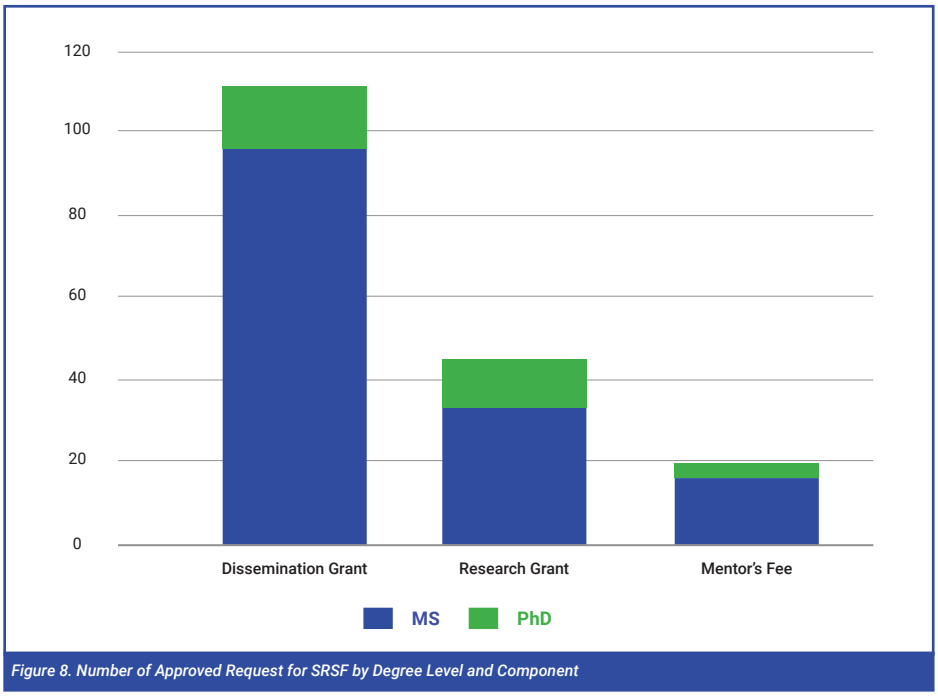


Figure 8. Number of Approved Request for SRSF by Degree Level and Component

For the Dissemination Component, SEI provides graduate scholars financial support to publish their research in technical journals or present them at local or international conferences.

From L-R: Mr. Irish Emmanuel P. Agpoon, MS Microbiology from UST presented his research titled Mangrove Yeasts as Protein Additive to Nile Tilapia (Oreochromis niloticus) Feed Meal during the Asian Mycological Congress 2021 at Pathum Thani, Thailand on 3-5 August 2022; Ms. Ellakim Sasing, MS Biology from USC presented her research titled "Anticancer Activity of Calophyllum inophyllum L. (Malpighiales: Calophyllaceae) on Human Colorectal Cancer Cell Line (HCT116)" during the 2nd ASNP-KNUT Joint International Symposium, The International Conference on Asian Biotechnology and Natural Products Research, at Ochang, South Korea on 5 October 2022.

On the other hand, the Research Grant is additional funding to supplement the outright thesis/dissertation allowance.

As an incentive to the thesis/dissertation advisers of scholars who complete their research and finish their degrees on time, they get the Mentor's Fee.

B. Research Enrichment (Sandwich) Program

SEI approved twenty-one (21) applications of ASTHRDP scholars for a grant under the Research Enrichment Program in 2022. The program enables the scholars to do part of their research in research institutions abroad with facilities, resources, or expertise that are not locally available.

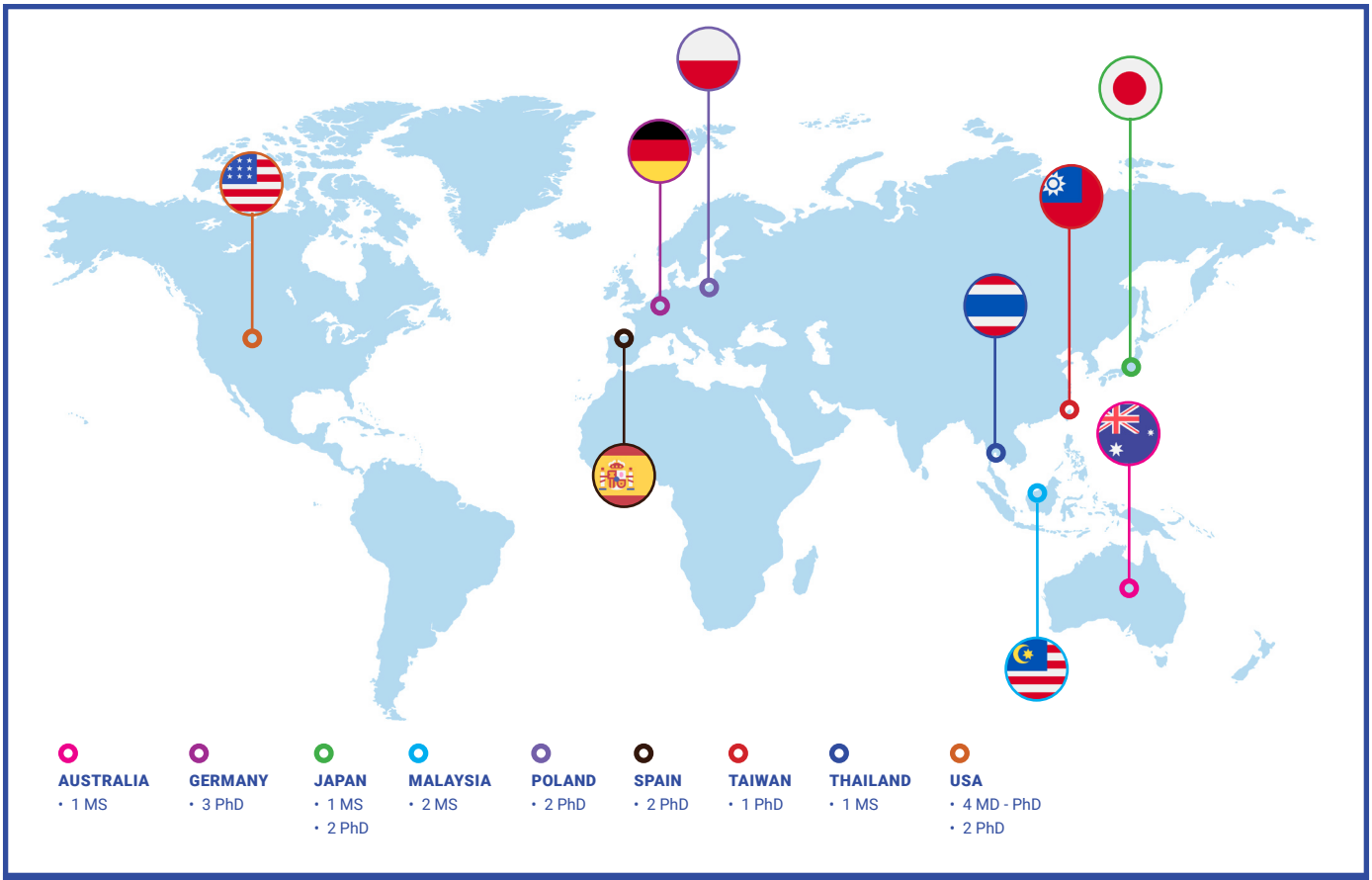


Figure 9. Distribution of Sandwich Program Grantees by Degree Level and Country

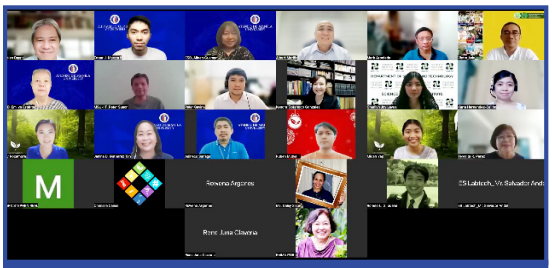
Mr. Dexter Ontoy, Ph.D Environmental Science student from UPLB, conducting his research work at the Michigan State University, USA.

C. *Manila Economic and Cultural Office (MECO) – Taipei Economic and Cultural Office (TECO) Sandwich Scholarship Program (SSP)*

Out of the 21 applicants endorsed for the 2022 MECO-TECO SSP, ten (10) qualified and proceeded with the conduct of their research under the sandwich program in Taiwan.

The SEI, with the DOST International Technology Cooperation Unit, conducted an Orientation and Signing of the Grant Agreement on 18 July 2022 via Zoom.

The MECO-TECO SSP provides Filipino MS and Ph.D. students with opportunities to do their research work in a reputable university or research institution in Taiwan. It is a collaborative undertaking implemented by DOST and Taiwan's National Science and Technology Council (NSTC).



The TWG interviews the ADMU officials, faculty members and students of the PhD Environmental Science program online via Zoom.

Graduate Programs Evaluated for Inclusion in the ASTHRDP

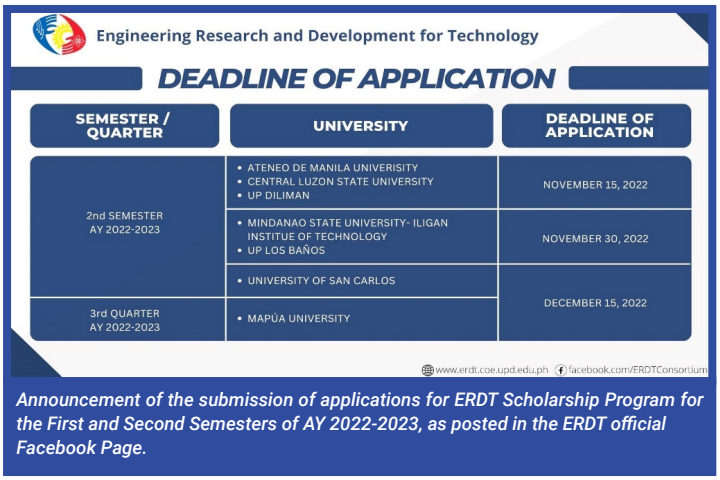
A technical working group (TWG) of experts evaluated the Ph.D. Environmental Science program of Ateneo de Manila University on 19 April 2022 for possible inclusion among the programs where ASTHRDP scholars can enroll in the said school.The TWG assessed the admission process, enrolment and graduation rates, research facilities, library holdings, and the availability and capabilities of faculty members who can mentor scholars in their theses/dissertations for the said program.

Upon the recommendation of the TWG, the DOST Secretary approved the said program's inclusion effective AY 2022-2023.

ENGINEERING RESEARCH AND DEVELOPMENT FOR TECHNOLOGY (ERDT) PROGRAM

A. Local Graduate Scholarship 2022 Intake and Number of Scholars Supported

To fulfill its mandate and to enable the ERDT applicants to meet the requirements, SEI extended the deadlines of the application. Interested applicants emailed their applications to the specific consortium member-university they wished to enter, and the latter evaluated the same and endorsed the list of potential qualifiers to SEI for final evaluation and approval of the DOST Secretary.



Announcement of the submission of applications for ERDT Scholarship Program for the First and Second Semesters of AY 2022-2023, as posted in the ERDT official Facebook Page.

A total of 249 MS and 53 PhD qualifiers were approved by the DOST Secretary. Before the semesters started, these new qualifiers attended the Virtual Orientation on Scholarship Policies and Procedures via Zoom held by their respective university ERDT Project Leader and Project Staff. *(See distribution of 2022 intake by university and by degree program in Table 6.)*

Table 6: Distribution of 2022 intake by university and by degree program

University	Master's Degree (MS)	Doctoral Degree (PHD)
ADMU	5	0
CLSU	24	4
DLSU	36	6
MU	39	1
MSU-IIT	26	1
UPD	38	17
UPLB	27	5
USC	14	8
TIP Manila	5	2
TIP QC	1	-
Total	**215**	**44**

For the monitoring of the continuing and graduating scholars and in view of the ongoing COVID-19 pandemic, the S&T Graduate Scholarship Advisory Committee (STGSAC) through Resolution No. 2021-01 approved the measures and interim guidelines to remain effective for another academic year, i.e., AY 2021-2022.

In 2022, SEI monitored and supported a total of 954 MS and PhD scholars in various engineering fields.

Table 7: Number of ERDT Scholars Supported in 2022

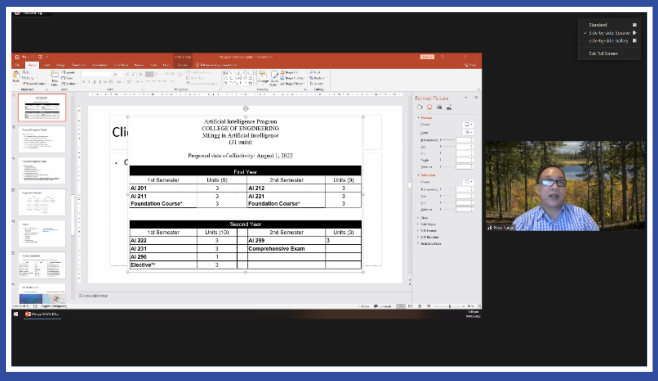
Status	MS	PhD	Total
New	249	53	302
Continuing	263	159	422
Graduating	187	43	230
Total	699	255	954

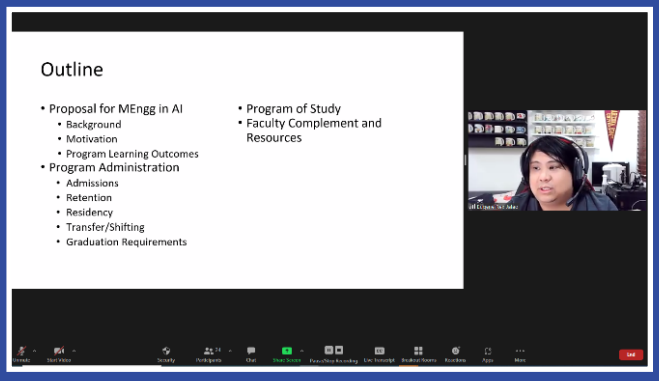
B. Graduate Program Evaluated for Inclusion in the ERDT Program

In a move to widen the scope of specializations and enable more students to avail of the ERDT scholarship, requests for possible inclusion of new programs from universities were evaluated.

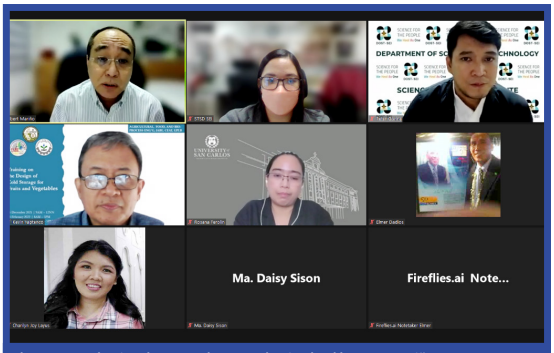
A Technical Working Group evaluated the Master of Engineering in Artificial Intelligence (MEngg AI) program of the University of the Philippines Diliman (UPD). The evaluation process included the document review; and on 04 March 2022, virtual presentation of the program, ocular visit of its facilities, and virtual interview of the programs' faculty members and students.

The TWG conducting the virtual evaluation and ocular visit of the TIP programs/facilities via Zoom Meeting App.





Representative from the UPD College of Engineering presenting the Program Design and Course Outline of the MEngg AI



The TWG conducting the pre and post evaluation lead by Engr. Mariño.

On the TWG recommendation, the DOST Secretary approved the inclusion of the MEngg AI program of UPD among the priority graduate programs covered under the ERDT Scholarship Program effective First Semester of AY 2022- 2023. SEI initially provided five (5) scholarship slots per year and will conduct an evaluation after the first batch has completed or at least a semester/year.

As of the start of the First Semester of AY 2022-2023, there are two (2) qualified for the MEngg AI as ERDT scholars.

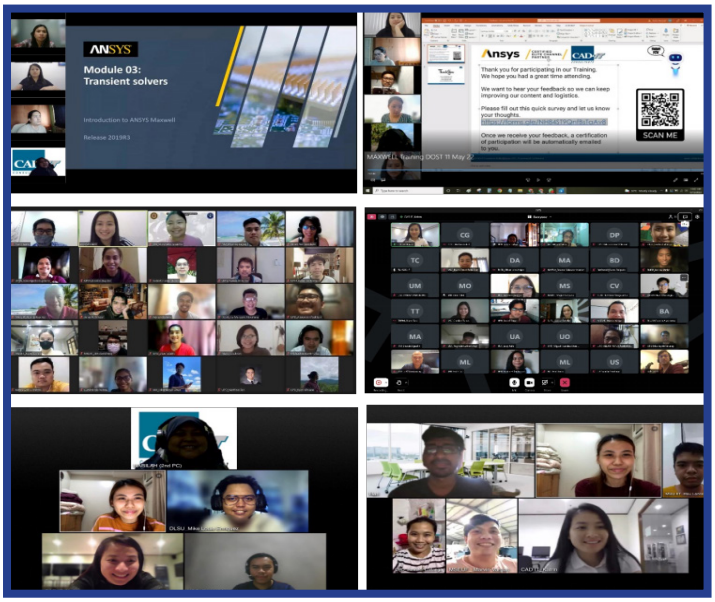
C. Ansys Training for ERDT Scholars and Faculty Advisers 2022

The ERDT Consortium conducted a technical sharing session in December 2021 attended by 246 scholars and faculty advisers from the eight consortium member universities. From the data collected and the recommendations, they were able to identify the training needs focusing on certain Ansys Applications that were pre-determined to be suitable and applicable to the nature of research that ERDT scholars and faculty advisers are working on.

The series of training on the following Ansys applications was conducted from April 2022 to June 2022. These were attended by ERDT scholars and faculty advisers, as well as some students from non-ERDT institutions:

Table 8: Number of Participants per Training Sessions.

Course Title	Platform	Covered Date/s	Participants		
			Male	Female	Total
HFSS Group 1	Virtual (Zoom)	7-8 April 2022	17	9	26
Fluent Group 1	Virtual (Zoom)	13, 18-19 April 2022	32	6	38
Fluent Group 2	Virtual (Zoom)	25-27 April 2022	27	15	42
Maxwell Group 1	Virtual (Go To Meeting)	10-11 May 2022	13	15	28
HFSS Group 2	Virtual (Go To Meeting)	12-13 May 2022	25	7	32
Maxwell Group 2	Virtual (Go To Meeting)	16-17 May 2022	15	9	24
Mechanical Group 1	Virtual (Go To Meeting)	18-20 May 2022	47	12	59
Mechanical Group 2	Virtual (Go To Meeting)	6-8 June 2022	27	7	34
Fluent Group 3	Virtual (Go To Meeting)	14-16 June 2022	62	20	82
Mechanical Group 3	Virtual (Go To Meeting)	20-22 June 2022	29	11	40
		TOTAL	**294**	**111**	**405**



Four hundred five (405) students and faculty members were able to benefit from the free Ansys Training. At the end of the courses, the participants learned how to use the different tools in the Ansys software, and got tips as to how they can best utilize the software in their projects.

Group photos of some of the Ansys Training participants.

Announcement of the Call for Papers as posted in the ERDT website and official Facebook Page.

D. 10th ERDT Congress: Upscaling Engineering Education and Research

The ERDT Congress, an annual event where ERDT scholars, faculty members, researchers, visiting professors, and industry delegates come together, learn, and get inspired by plenary lectures of distinguished local and foreign professors, researchers, and government and industry leaders, was conducted on 30 September 2022 at the SREDC Hotel Rembrandt, Tomas Morato Ave, Quezon City. The same was live streamed via the Zoom Meeting App and YouTube Live to open viewership to the public.

With the theme, *"Upscaling Engineering Education and Research,"* the 10th ERDT Congress was participated in by hundreds of participants both in the face-to-face and in the virtual sessions.

Table 9: Number of Participants.

	Male	Female	Total
Virtual Attendees	176	200	376
Physical Attendees	62	41	103
Total	**238**	**241**	**479**

Notable individuals from the different sectors/ industries talked on aligning the engineering curricula with real-world challenges and industry demands to adapt to the needs of the current trends and issues.

E. ERDT Thesis/Dissertation Writing Seminar 2022

The ERDT Thesis/Dissertation Writing Seminar 2022 was held on 27 June 2022 virtually via Zoom and was streamed live on YouTube and Facebook in order to cater to a wider audience. More than 900 students and academicians from different colleges and universities all over the country.

The online seminar served as a platform where scholars established peer review circles for graduate researchers across the Consortium who have related thesis/dissertation topics. Through these circles, ERDT hopes to further enhance the quality of researches that the Consortium produces and to encourage more research collaborations in the future.

Announcement of the Registration as posted in the ERDT website and official Facebook Page.

The different sessions enjoyed the following viewership:

Table 10: Number of Participants per Session

Sessions	Participants
Morning Session	973
Afternoon Session	849

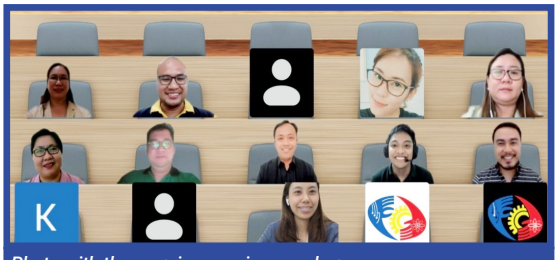


Photo with the morning session speakers.

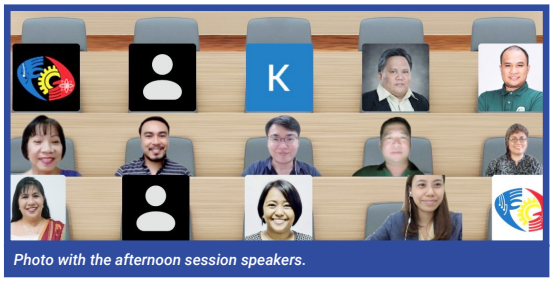


Photo with the afternoon session speakers.

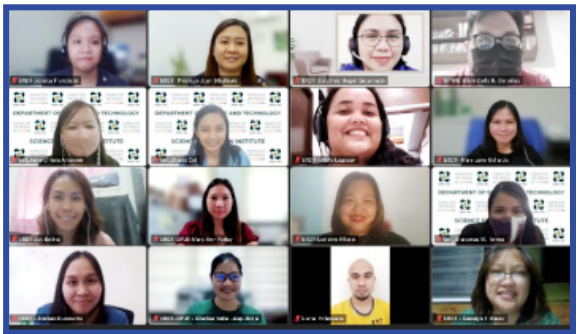
Distinguished Speakers for the ERDT Thesis/Dissertation Writing Seminar 2022.

F. Training on Effective Project Management

For the second leg of the Staff Learning and Development program, ERDT organized a training on *"Effective Project Management"* for its Project Staff. The two-day virtual training was held on 26-27 April 2022 via Zoom Meeting and was facilitated by Mr. Henry Palaca, an accredited trainer from the Philippine Trade Training Center. Twenty-six (26) ERDT and SEI Project Staff participated in this learning and development intervention.

Table 11: Distribution of Participants by Sex

	Male	Female	Total
ERDT Project Staff	3	18	21
SEI Project Staff	1	4	5
Total	**4**	**22**	**26**



Photos of the participants with the trainer and facilitators.

The training applied the basic principles of project management to develop the necessary knowledge and skills needed for a successful project implementation and control.

The training helped the participants acquire and improve their skills in project management and in supervising the ERDT scholars through exchange of knowledge with other participants.

G. Mentoring the ERDT Scholars and Consortium Faculty Members through the Consortium Member Universities' Initiated Activities

To help improve and level up the skills of the scholars and faculty members of the ERDT Consortium, the member universities initiated the conduct of the following activities:

Table 12: The initiated activities by the member universities

University	Brief Description and Objectives	Activities	Covered Date/s	Participants		
				Male	Female	Total
CLSU	Fellowship of all on-going scholars and a *"kamustahan session"* where scholars can express their concerns with faculty members/ co-scholars/scholarship management. Incorporated also in this session is a stress management activity for scholars and faculty members.	CLSU-ERDT Kwentuhang Bayaw	14 October 2022	30	46	**76**
	The writeshop series aims to guide/mentor scholars from proposal writing to publication writing help them stay on track	Writeshop on Proposal Writing: A Guide in Crafting Thesis Outline	26 October 2022	16	26	**42**
		Writeshop on Thesis and Publication Writing	23 November 2022	25	46	**71**
MSU-IIT	The activities aimed to help scholars and faculty improve their patent drafting skills and techniques. Improving the skills of those filing patent applications is important for the well-functioning of the patent system at the national, regional, and international levels.	Patent Drafting Lectures for ERDT Scholars and Faculty Advisers	12-13 September 2022	49	26	**75**
		IP Patent Search with ERDT Scholars	28 December 2022	-	-	**25**
UPLB	This event serve as a forum assess the needs and concerns of the scholars.	ERDT-UPLB Kumustahan	12 December 2022	14	21	**35**

Photos of the participants, trainers/speakers, and facilitators during the Kwentuhang Bayaw at ERDT-CLSU.

Photo documentation during the initiated activities of the ERDT consortium member universities.

H. Strengthening the ERDT Consortium Faculty Members

To capacitate and level up the skills of the faculty members of the ERDT Consortium, DOST-SEI awarded foreign PhD scholarships under the Faculty Development Program to 8 qualified faculty members in 2022:

Table 13: The new scholars under the Faculty Development Program (Foreign Ph.D. Scholarship) for the year 2022.

Name of Faculty Scholar	Home University	Host University	Country	Area of Specialization
Acosta, Timothy John S.	UPD	The University of Western Ontario	Canada	Civil and Environmental Engineering
Aguirre, Jedidiah C.	UPLB	ETH Zurich (Swiss Federal Institute of Technology)	Switzerland	Geophysics
Bas, Jonah Lee I.	USC	Monash University	Australia	Civil Engineering
Lorenzo, Simon Anthony D.	UPD	University of Melbourne	Australia	Engineering and IT
Pascual, Christopher S.	CLSU	North Carolina State University	USA	Biological and Agricultural Engineering
Pesigan, Clarissa M.	UPLB	Kyushu University	Japan	Industrial Engineering
Razonado, Ivy Ann C.	UPD	Université Claude Bernard Lyon 1	France	Materials Science and Engineering
Tarife, Rovick P.	MSU-IIT	Waseda University	Japan	Environment and Energy Engineering

SEI, in collaboration with the ERDT Consortium, monitored and supported a total of 43 on-going Faculty Development scholars, including the new intake in 2022. Table 14 shows the countries where these scholars are studying and their fields of study.

Table 14: Distribution of On-going Faculty Scholars by country and field of study.

Country	Field of Study	No. of Scholars
Australia	Civil Engineering	1
	Electrical and Computer Systems Engineering	1
	Electrical Engineering	1
	Engineering and IT	1
	Hydrology	1
	Materials Science and Engineering	1
Austria	Surveying and Geoinformation	1
Canada	Chemical Engineering	1
	Civil and Environmental Engineering	1
France	Materials Science and Engineering	2
Japan	Computer Science	2
	Energy and Environmental Engineering	2
	Industrial Engineering	1
	Minerals Processing and Resources Recycling Engineering	1
Malaysia	Geoinformatics	1
Netherlands	Aerospace Engineering	1
New Zealand	Mechanical Engineering	1
Singapore	Architectural Engineering	1
South Korea	Architectural Engineering	1
	Electrical Engineering	1
	Mechanical Convergence Engineering	1
Switzerland	Geophysics	1
Taiwan	Electrical Engineering	2
Thailand; Japan	Engineering Technology and Civil Engineering	1
United Kingdom	Biomedical Imaging	1
	Computer Science and Informatics	1
	Electronics and Communications Engineering	1
	Mechanical Engineering	2
	Sustainable Energy Technology	1
USA	Agricultural and Biosystems Engineering	1
	Biological and Agricultural Engineering	4
	Civil and Environmental Engineering	1
	Civil Engineering	1
	Electrical Engineering and Computer Sciences	1
	Engineering (concentration in Mechanical Engineering)	2
	Structural Engineering & Geomechanics	1
TOTAL		**43**

Table 15: Scholar Graduates in 2022 under the FDP-Foreign PhD Scholarship by country

Name	Degree Program	Host University	Title of Dissertation	Graduation/ Completion
Mindanao State University-Iligan Institute of Technology				
Hora, Jefferson A.	PhD in Electrical Engineering	University of Technology Sydney, Australia	Single Chip Hybrid Energy Harvester Design for Smart Building Sensor Node Application	February 2022
Quimque, Harreez V.	PhD in Electrical Engineering	National Taipei University, Taiwan	Baseband system design enabling machine learning for 5G IoT communications	June 2022
Zamayla, Arnel D.	PhD in Mathematics and Computer Science	Universita Della Calabria, Italy	Development of an Under-Vehicle Inspection System Using Convolutional Neural Networks	April 2022
University of the Philippines Diliman				
Garcia, John Carlo S.	PhD in Mechanical Engineering	Waseda University, Tokyo, Japan	Theoretical Analysis and Investigation of a Proposed Power-and-Ejector Refrigeration Cycle Using Low-Grade Heat	August 2022
Regonia, Paul Rossener R.	PhD in Computer Science	Nara Institute of Science and Technology, Nara, Japan	Brain Cooling Simulation on Epileptic Seizures using Neuronal Network	March 2022
University of the Philippines Los Baños				
De Castro, Leandro T.	PhD in Chemical Engineering	University of South Carolina, USA	Development of Catalyst for the conversion of Biomass feedstocks to renewable hydrocarbon fuels	May 2022

I. Research Enrichment Program (Sandwich Program)

In the year 2022, 7 ERDT scholars were awarded grants under the Research Enrichment (Sandwich) Program to do part of their research abroad.

Table 16: ERDT scholars who are awarded under the Sandwich Program

Name of Scholar	Home University	Degree Program	Host University	Country	Area of Specialization
Magbitang, Ronnel D.	MU	MS in Electrical Engineering	Universiti Teknologi Petronas	Malaysia	Mixed-Dye and Activated Carbon from Theobroma Cacao as Photosensitizer and Counter Electrode for Titania-Based Dye-Sensitized Solar Cell
Pocaan, Joshua P.	DLSU	MS in Chemical Engineering	Hokkaido University	Japan	Determination of Optimum Material Ratio of Locally Available Neutralizing Agents as Mixed Media for Passive Treatment for Acid Mine Drainage (AMD)
Wayco, Jeryl M.	MSU-IIT	MS in Electrical Engineering	Waseda University	Japan	Electric Line Routing Optimization applied with GIS Spatial Analysis for Rural Microgrid
Arriola, Emmanuel R.	DLSU	PhD in Mechanical Engineering	Virginia Tech	USA	Thermomechanical reliability optimization and thermal fatigue analysis of Pd-free solder (SAC 305) balls in semiconductor packages
Del Rosario, Clark Kent Romeo T.	CLSU	MS in Agricultural Engineering	Kansas State University	USA	Evaluation of Self-Propelled Precision Boom Sprayer Technology for Adoption in the Philippines

Soni, Menard A.	CLSU	MS in Agricultural Engineering	Kansas State University	USA	Performance Evaluation of Modern Air Seeders and Row Crop Planters for Potential Precision Corn (Zea mays L.) Planting in the Philippines
Daño, Dayle Tranz R.	MSU-IIT	MS in Material Science and Engineering	Hokkaido University	Japan	Removal of Valuable Metals from Acid Mine Drainage using Al-Fe Bimetallic Particles

The ERDT Sandwich Program is designed to enable ERDT local graduate scholars to conduct research abroad in areas that have yet to be developed in the consortium member-universities or in fields of study where research facilities are not available or inadequate in the country. This helps the scholars complete their research on time.

J. Research Dissemination Grant

A total of 161 ERDT scholars had their research works published in refereed journals or presented their research outputs in local and international conferences, or scientific meetings with financial grant under the ERDT Research Dissemination Grant (RDG) in 2022.

RDG-Supported Paper Publication/ Presentation in 2022	
39	122
Number of Published Papers	Number of Presented Papers

K. Faculty Research Dissemination Grant

The faculty members of the ERDT Consortium member-universities enjoyed financial support under the Faculty Research Dissemination Grant (FRDG) for the publication of their research works in refereed technical journals or presentation of the same in local and international conferences, fora, and scientific meetings.

FRDG-Supported Paper Publication/ Presentation in 2022	
36	40
Number of Published Papers	Number of Presented Papers

SCIENCE AND TECHNOLOGY REGIONAL ALLIANCE OF UNIVERSITIES FOR NATIONAL DEVELOPMENT (STRAND)

Continuing support for regional universities through Project STRAND

Inclusive development across the regions in the Philippines has always been one of the priorities of the DOST. To ensure that this goal is met, the Department through SEI remains steadfast in its effort to continue capacitating the higher education institutions (HEIs) in the regions through its Project Science and Technology Regional Alliance of Universities for National Development or Project STRAND.

In 2022, SEI supported a total of 271 Master's and 44 Doctoral scholars under Project STRAND.

Table 17: Distribution of STRAND Scholars by University

University	On-going Scholars	
	MS	PhD
Batangas State University	8	
Central Mindanao University	106	10
Mariano Marcos State University	5	
Mindanao State University–Marawi	77	
Mindanao State University-Naawan	7	2
Nueva Vizcaya State University	21	9
Saint Louis University	25	
University of San Agustin[1]	3	2
University of Southeastern Philippines	1	
University of Science and Technology of Southern Philippines–Cagayan de Oro	18	21
TOTAL	**271**	**44**

[1] under STRAND 1 (faculty development)

Conceived to address the need to expand the delivering HEI for the DOST-SEI graduate scholarships in STEM courses including science and mathematics education, Project STRAND aims to provide the S&T professionals in the regions opportunities and access to advanced degree studies in universities with approximately the high quality of education.

The project is also one strategy in addressing the call of the administration to reach out and support the HEIs in the provinces that need to be strengthened in terms of developing human resource capabilities to offer quality STEM courses.

CAREER INCENTIVE PROGRAM (CIP)

Ms. Justine R. De Leon, a scholar graduate under the ASTHRDP and an MS Graduate Fellow deployed at the University of Santo Tomas, retrieves data from remotely deployed water temperature data loggers. Data loggers were deployed in December 2021 at Lake Yambo, San Pablo, Laguna, and readings are retrieved monthly.

CIP Graduate Fellows: A mechanism to ensure supply of S&T experts

Realizing that having enough local experts in various fields related to science, technology, and innovation is a big help to address pressing problems and issues, the DOST-SEI deemed it necessary to put in place some strategic mechanisms that would ensure stable and sustainable supply of local researchers, scientists, and engineers in the country.

The DOST Graduate Scholars Career Incentive Program (CIP) provides training opportunities through actual involvement in research and development (R&D) and other technological services and thus, creates a pool of trained S&T personnel. The CIP Graduate Fellows are researchers, scientists, and engineers assigned in various DOST R&D Institutes/Agency/Unit or Regional Office or identified network research institution to develop and implement R&D programs and projects.

Since its implementation in 2015, the CIP has employed hundreds of highly-skilled and competent S&T professionals who are products of the various DOST-SEI Graduate Scholarship Programs, i.e., Accelerated Science and Technology Human Resource Development Program (ASTHRDP), Engineering Research and Development for Technology (ERDT), and Foreign Graduate Scholarship Program.

In 2022, SEI deployed a total of 130 CIP Graduate Fellows to different DOST research institutions, other government research institutions, university research facilities where they contributed their knowledge and expertise.

Table 18. Distribution of CIP Graduate Fellows by Host Institution

Host Institution	MS Graduate Fellow	PhD Graduate Fellow	Total
Ateneo De Davao University	1		1
Ateneo De Manila University		1	1
Bicol University	1		1
CARAGA Food Innovation Center	1		1
Cavite State University	2		2
Central Luzon State University	3		3
Davao Medical School Foundation, INC.	1	1	2
De La Salle University	3		3
DOST RO 1	1		1
DOST RO 11	2		2
DOST RO 6	1		1
DOST RO CARAGA	1		1
DOST-PAGASA	6		6
DOST-ITDI	11		11
MSU-IIT	3		3
MSU-NAAWAN	4		4
Philippine Carabao Center	1		1
DOST-PNRI	10		10
DOST-PTRI	2		2
Research Institute of Tropical Medicine	2		2
University of San Agustin	3	1	4
University of San Carlos	3		3
University of Santo Tomas	3		3
UP Cebu	1		1
UP Manila		1	1
UP Visayas	4		4
UP Diliman	14	1	15
UP Los Baños	39		39
USTP-Claveria	1		1
Visayas State University	1		1
GRAND TOTAL	125	5	130

Ms. De Leon collects plankton samples as bioindicators in a river in Albuera, Leyte. This is one of the fieldworks she is currently undertaking under the DOST-JSPS Methane Dynamics Project.

The CIP Graduate Fellow is a full-time and contract of service (COS) position offering salary grades (SG) in accordance with the current Salary Standardization Law SSL5 fourth tranche plus 20 percent premium: MS Graduate Fellow (SG-19); and PhD Graduate Fellow (SG-22).

The CIP is just one of the strategies in response to the administration's call to strengthen the country's S&T capability and to a certain extent, avert unemployment of DOST-SEI scholar-graduates.

THE DOST-SEI FOREIGN GRADUATE SCHOLARSHIP PROGRAMS: STRENGTHENING THE POOL OF EXPERTS IN THE COUNTRY

The S&T foreign graduate scholarship programs, some of which are in collaboration with foreign universities and other governments, aim to build the capacities of Filipino students and enhance the use of enabling technologies in priority research and development (R&D) areas identified in the DOST R&D Trusts.

For 2022, the DOST-SEI announced the availability of scholarship slots for various programs including collaborations with foreign universities for graduate studies abroad under the following programs:

1. DOST-SEI Foreign Graduate Scholarships in Priority S&T Fields;
    - Scholarship for the Advancement of STEM Education (Project SASE)
    - Foreign Graduate Scholarship Program in Energy-related Fields
2. DOST-SEI-UAlberta S&T Graduate Scholarship Program;
3. PhilFrance DOST Fellowship Program; and
4. DOST-SEI-Nagoya University Joint Scholarship for PhD in the field of Bioagricultural Science

Adapting to the recent challenges due to pandemic, application to various scholarship programs were carried out both online and physical. Moreover, orientation of qualified qualifiers for Academic Year 2022-2023 was still conducted via the online platform.

With the declining cases of COVID-19 in most parts of the world, countries slowly opened their borders to accommodate foreigners and travelers, including the DOST-SEI foreign graduate scholars. Scholars were able to depart and attend their in-person classes at their study placement within the approved period.

Scholars who attended their online classes under the supervision of their respective universities due to delayed processing of their documentary requirements continued to receive their monthly living allowance based on the local rate given to S&T graduate scholars. This will eventually be adjusted to the foreign rate until such time that they are able to attend their in-person classes in their respective universities abroad.

DOST-SEI Foreign Graduate Scholarships in Priority S&T Fields

The DOST-SEI Foreign Graduate Scholarship Program in Priority S&T Fields is open to Filipino citizens who wish to pursue Master of Science (MS) or Doctor of Philosophy (Ph.D.) degrees in priority emerging S&T fields which are not being offered yet in any higher education institution in the country due to lack of qualified personnel or experts to handle the program or due to brain-drain, retirement and other reasons identified.

The scholarship program aims to:

- Develop a pool of high-quality human resources in science and engineering who will contribute to the country's global competitiveness and economic development;
- Provide opportunities to talented and deserving students to study and obtain MS and Ph.D. degrees in science and engineering in reputable institutions abroad; and
- Upgrade the country's research and technological innovation capabilities in the area of advanced sciences and emerging technologies.

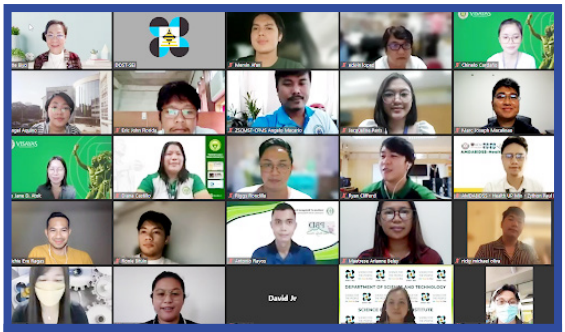
It is available to applicants who are in the first five years of their research career measured from the date when the applicant obtained his/her baccalaureate degree and meet the other eligibility requirements.

For the year in review, SEI awarded scholarships to 42 successful applicants to the program: 23 MS and 19 Ph.D. Out of the number, 38 accepted the scholarship award and signed the Scholarship Agreement.

Table 19: Distribution of On-Going DOST-SEI Foreign Graduate Scholars by Country of Study Placement

Country of Study Placement	MS		Ph.D.		Sub-total		Total
	Female	Male	Female	Male	Female	Male	
Australia	1	4	5	5	6	9	15
Austria				1		1	1
Belgium				1		1	1
Czech Republic				1		1	1
Finland				1		1	1
France	1	2		1	1	3	4
Germany		1		1		2	2
Hong Kong				1		1	1
Italy	1			1	1	1	2
Japan	2	1	3	7	5	8	13
Malaysia	1			3	1	3	4

Netherlands	2	5			2	5	7
New Zealand				2		2	2
Poland			1		1		1
Singapore			1	1	1	1	2
South Korea				1		1	1
Spain		1	1	1	1	2	3
Sweden		1				1	1
Switzerland			1		1		1
Taiwan	3	3		2	3	5	8
Thailand	1	3	2	2	3	5	8
United Kingdom	3	3	8	8	11	11	22
United States	2	1		4	2	5	7
TOTAL	**17**	**25**	**22**	**44**	**39**	**69**	**108**

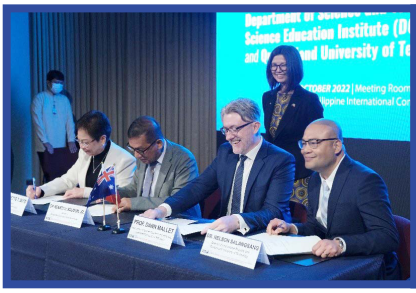


Orientation of scholars for the 2022 intake

Scholarship for the Advancement of STEM Education (Project SASE)

With the objective of improving the quality of Science, Technology, Engineering, and Mathematics (STEM) education in the country, the DOST-SEI provides opportunities to talented and deserving STEM teachers to study and obtain Master's and Doctoral in STEM Education degrees at the Queensland University of Technology (QUT) in Brisbane, Australia.

The DOST-SEI forged partnership with the QUT through an International Cooperation Agreement (ICA) for the implementation of the Scholarship for the Advancement of STEM Education (Project SASE). The signing of the ICA was held on 21 October 2022 at the Philippine International Convention Center.



SEI Director Dr. Josette T. Biyo, DOST Secretary Dr. Renato Solidum, Jr., QUT Professor Dann Mallet, QUT Director for International Projects Unit Mr. Nelson Salangsang ink the International Collaboration Agreement between the DOST-SEI and QUT. Together with them is Australian Ambassador to the Philippines Ms. HK Yu.

Dr. Biyo, Dr. Solidum, Prof. Dann Mallet, Ambassador Yu, and Mr. Salangsang pose for a group picture together with the 12 PhD and 16 MS scholars.

Project SASE is a capacity-building program for the faculty members of the Philippine Science High School System (PSHSS) who pursued Master of Education with specialization in STEM Education and Doctor of Education at the QUT to commence in January 2023.

The cohort of 28 scholars, 16 MS and 12 PhD, is set to undertake their respective programs in January 2023 in Brisbane, Australia.

Table 20: Distribution of scholars by degree program

Degree Program	No. of on-going Scholars
MS	2
Ph.D.	8
TOTAL	**10**

Foreign Graduate Scholarship Program in Energy-related Fields

The Foreign Graduate Scholarship Program in Energy-related Fields is intended to capacitate the faculty members of the Palawan State University (PSU). The University had committed to developing graduate degree programs in Petroleum Engineering and other related fields once it had the required faculty complement and facilities.

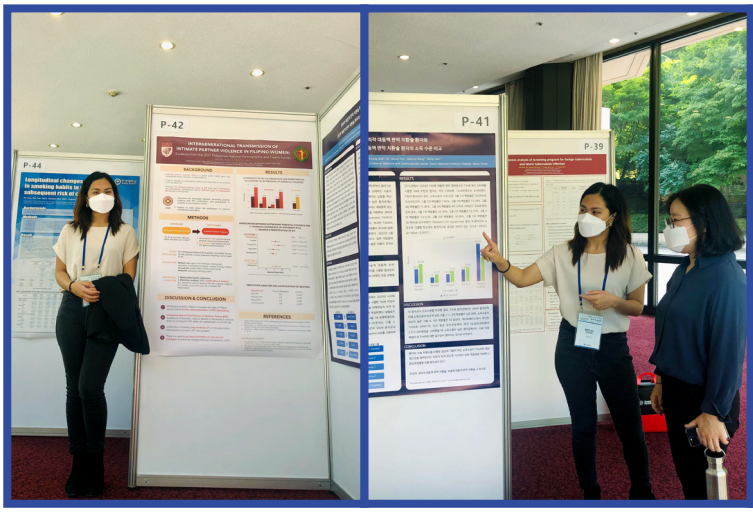
In 2020, the DOST-SEI awarded scholarships to 13 faculty members of the PSU who pursued of MS and Ph.D. in energy-related degrees at the Universiti Teknologi Petronas (UTP) in Malaysia. In addition to this, there are two (2) ongoing Ph.D. scholars, from the first cohort who are doing their dissertation, also enjoyed financial support from SEI.

In the midst of the Covid-19 pandemic, the scholars attended online classes in close collaboration with their research advisers. Towards the end of the year, some of these scholars defended their dissertation topics via virtual meetings. While attending their online classes, they received a monthly living allowance equivalent to the amount received by MS and PhD scholars under the DOST-SEI local graduate scholarships.

At the height of pandemic, most scholars deferred their scholarships and on-going graduate studies. Eventually, their scholarships were reinstated in June 2022 after the lifting of travel restrictions in the Malaysian borders.

Of the 15 scholars at UTP, 5 already completed their degree and returned to PSU to render the required service obligation.

S&T Foreign Scholars in Action



ABIGAIL PUNO
Korea University

Abigail Puno is a DOST-SEI Foreign Graduate Scholarship Program scholar, studyingfor her Ph.D. in Public Health Sciences at Korea University, South Korea. In 2022, sheattended the Korean Society of Epidemiology Autumn Conference held on September 23-24. She presented her poster on the study entitled Intergenerational Transmission of Intimate Partner Violence in Filipino Women: Evidence from the 2017 Philippines National Demographic and Health Survey. Her poster received an excellence award, and Puno received a 200,000 won cash prize.

ANGELINA A. AQUINO
DOST-SEI Scholar

05 October 2022 - Standing in front of the Northern Institute at Charles Darwin University, my home institution for the next four years. First day on campus!

20 October 2022 – Attending a workshop on emergency communications during hazardous weather events, a collaboration between the Australian Bureau of Meteorology, the Aboriginal Interpreter Service, and Northern Territory Emergency Services.

20 January 2023 – Group discussion with Aboriginal Bininj women (centermost three) on language learning, kinship, and traditional food practices, together with my lab partner, 2nd-year PhD candidate Tereza Hlaváčková (far left).

10 October 2022 – Field trip to the Aboriginal Bininj community of Gunbalanya in the Arnhem Plateau with my supervisor and renowned computational linguist, Professor Steven Bird. Currently standing on a stone outcropping in front of a billabong – beware of crocodiles!

Measuring the leaf area index (LAI) of shrub and tree canopies using the LAI-2200C Plant Canopy Analyzer.

ARTURO G. CAUBA, JR.
MS in Geo-Information Science and Earth Observation,
University of Twente, The Netherlands

One of my elective courses had a fieldwork in which I measured the leaf area index of shrub and tree canopies using the LAI-2200C Plant Canopy Analyzer. LAI estimation is importance since it offers quantitative data on vegetation abundance. LAI is also useful for studying global ecology, evaluating vegetative development, and understanding the exchange of energy and nutrients in biological and physical processes. I went to two locations throughout the exercise: the shrubs around the ITC building and the tree canopies in the park.

In another exercise, I learned how to measure leaf area using three distinct instruments: the LI-3100C, LI-3000C, and AM350 area meters. The samples that are collected from the ITC Garden included broadleaf and long-thin leaves, and the leaf area measurements were performed in the laboratory.

On December 15, 2022, I presented my research proposal, titled "Estimation of Transplanting and Harvest Dates of Rice Crops in the Philippines Using Sentinel-1 Data," to the proposal assessment board. The board was made up of a chairperson and three members, two of whom are my supervisors. The proposal defense went well because the board approved my proposed topic and provided positive feedback.

Excited to share my research on beetle ecology during last year's international conference (20th European Carabidologist Meeting). It was an honor to present both an oral and poster presentation, and I am grateful for the opportunity to share my findings with fellow researchers in the field.

Last year, I had the privilege of embarking on a fieldwork adventure in Mindanao and Palawan, two of the most biologically diverse regions in the Philippines. As a field biologist and entomologist, I trekked through dense jungles, crossed rivers, and climbed mountains in search of rare and elusive insects. What an incredible biodiversity that exists in these amazing places.

DALE ANN P. ACAL
Ph.D. Entomology
University of Lodz, Poland

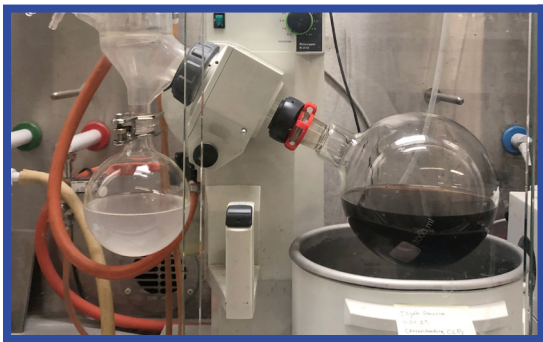
Exciting updates from our tiger beetle research project. I've been busy examining and measuring body parameters from both fresh materials and museum collections. Plus, we're thrilled to announce that we're preparing for the first-ever DNA barcoding of Philippine arboreal tiger beetles.

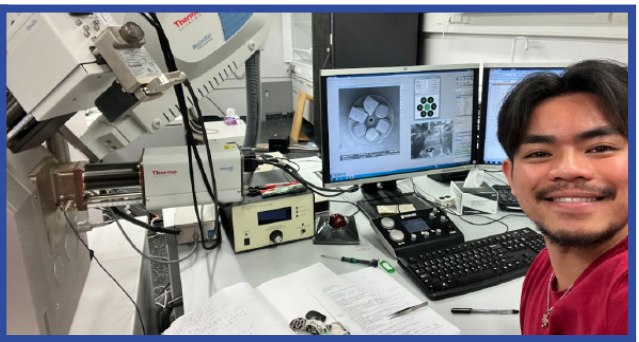
DIANA C. CASTILLO
Ph.D. in Applied Microbiology Chiang Mai University, Thailand

ELIJAH MARK GARCIA
Erasmus Mundus Joint Master Degree Bioceb European Master in Biological and Chemical Engineering for a Sustainable Bioeconomy

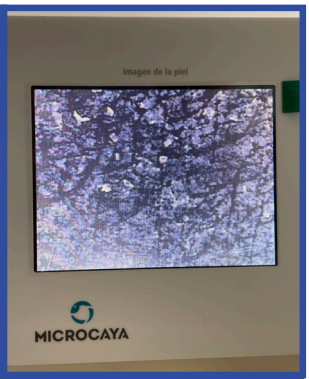
- *Université de Reims Champagne-Ardenne – Reims, France (Aug 2021 to Jan 2021)*
- *Tallinn University of Technology – Tallinn, Estonia (Jan 2021 to Aug 2022)*
- *Aalto University – Espoo, Finland (Aug 2022 to Present)*

Elijah Garcia (in green), with his Bioceb program mates, moved to Aalto University in Finland for the second year of their master's program. Aalto University is known for its highly international community, excellent union of science and art with technology and business, and strong commitment to sustainable development. In Aalto, Elijah and his colleagues had an intensive training on the fundamental properties of lignocellulosic biomass and their conversion into advanced materials to substitute fossil-based products. Moreover, they had been immersed to the Finnish way of living and to the vibrant student life of Aalto University.





Elijah Garcia is currently doing his master thesis in the Bioproduct Chemistry group at Aalto University. He is working on the production and characterization of lignin nanoparticles and investigating their potential as stabilizers for emulsion systems.



ERICA JOYCE C. ARTIAGA
Erasmus Mundus Joint Master Degree
EMOTION – European Master in Translational Cosmetic and Dermatological Sciences
Miguel Hernandez University, Spain

EMOTION students engaged in various lab activities, such as skin health appraisal using an advanced dermoscope (right photos) as well as wet lab with cell culture and in vitro assays (left photos)

JACOB ANDERSON C. SANCHEZ
Ph.D. in Veterinary Science
Osaka Metropolitan University, Japan

Hello everyone! My name is Jacob Anderson C. Sanchez, a faculty/researcher of the Pampanga State Agricultural University and scholar of DOST-SEI Foreign Graduate Scholarship Program.

I arrived in Japan in October 2022 to pursue a PhD in Veterinary Sciences focusing on Virology at Osaka Metropolitan University. Under the mentorship of Masayuki Horie-sensei, a renowned virologist, I am working on the "Development of a Metaviromic Detection and Rapid Diagnostic System for Viruses.

My study involves using high-throughput sequencing technology and applying bioinformatics analysis to discover new viruses. Given the ongoing pandemic, improving our preparedness against future threats is crucial, as viruses significantly threaten humanity's survival.

The lack of understanding about the diversity of viruses, for an instance, SARS-CoV 2, caught us off guard, and it quickly became a pandemic because we did not know enough about the disease. Through my research, I aim to discover novel viruses that current detection systems may miss, providing a better understanding of virus diversity and helping us prevent future infectious viruses.

In addition to identifying new viruses, I am also developing more sensitive, rapid, and on-site diagnostics for viruses. I aim to establish an isothermal amplification suitable for on-site DNA sequencing, which would significantly improve virus detection systems. This could help enhance our disaster risk reduction and preparedness and provide valuable molecular epidemiological information for outbreak monitoring and control.

During their recent visit to Osaka, Japan on 9 March 2023, I had the privilege of meeting Dr. Josette T. Biyo, Director of DOST-SEI, Dr. Reynaldo V. Ebora, Executive Director of DOST PCCARRD, Dr. Fezoil Luz C. Decena, Director of DOST PCAARRD Institution Development Division, and Ms. Sheryll Lee R. Sales, who serves as the secretariat of the FGSP. During our brief meeting, we discussed my academic progress and current situation here. I am fortunate to have their support and guidance as I pursue my studies.

On 20 March 2023, I presented my thesis proposal in a big hall attended by many participants, including Japanese professors and students. I am grateful for the opportunity to share my research plans with such an esteemed audience.

I look forward in completing my studies within the prescribed period, so when I come back home, I can contribute in our collective efforts to combat infectious viral diseases.

A photo opportunity with key officials of DOST headed by Dr. Josette T. Biyo (4th from left), DOST-SEI Director, and Dr. Reynaldo Ebora (2nd from left), DOST-PCAARRD Director.

The scholar during practice presentation of the research plan.

JERICO M. CONSOLACION
Ph.D. in Tropical Agrobiology and Bioresource Management
Czech University of Life Sciences, Prague, Czech Republic

Studying about the epididymal recovery of spermatozoa from the common eland bulls at CZU Research Facilities, Lany, Prague, Czech Republic

Observing the dominance behavioral observation of Simmental-Czech Bulls at the Institute of Animal Science Prague, Czech Republic

JOANE CAGUIAT
DOST-SEI Scholar

Presentation of research proposal entitled "Syntenic characterization and validation of drought tolerance genes in rice, wheat, barley, and maize crops" on November 9, 2022. It was endorsed and approved by higher degree by research (HDR), Postgraduate Research School of University of Western Australia (UWA).

Aiming to pursue her passion and commitment for research, as well as to learn new knowledge and strategies in agriculture and plant breeding, Ms. Joanne Caguiat applied as PhD student at University of Western Australia. Luckily, she was granted a full graduate scholarship funded by the Philippine government under the Department of Science and Technology- Science Education Institute (DOST-SEI) Foreign Graduate Scholarship for PhD in Agriculture degree despite the deferment due to border closure in Western Australia.

She is under the supervision of Drs. Guijun Yan and Hui Liu. Her research proposal entitled "Syntenic characterization and validation of drought tolerance genes in rice, wheat, barley, and maize crops" aims to identify major genes responsible for drought tolerance in rice, barley, and maize and validate functions of these genes present in wheat by genotype-phenotype association analysis. This also includes fine-mapping study to identify and locate major genes important for improving yield and adaptability to drought stress. Furthermore, introgression of multiple QTL/genes for drought tolerance will be conducted in order to stack two or more major drought QTL/genes and consequently develop super drought-tolerant lines.

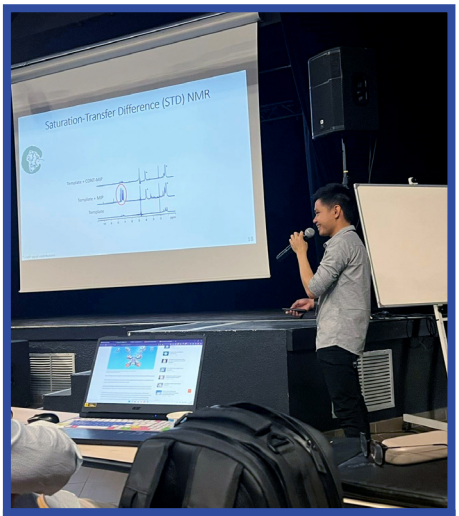
From June to December 2022, she attended relevant inductions for UWA-Graduate Research School (GRS) and orientation to proper protocols and guidelines of the university and specific laboratory and glasshouse activities. She also passed the required units on Diagnostic English Language Needs Assessment and Academic Conduct and Research Integrity. The research proposal was submitted to the Higher Degree by Research-Hub (HDR), Postgraduate Research School of UWA and was endorsed and approved by HDR. Research proposal was also presented successfully to a group of researchers, supervisor and co-supervisor. Breeding materials were established and pairs of Near Isogenic Lines (NIL) with reported contrasting drought stress responses were crossed to generate F1 seeds and these were further advanced as F2 seeds. These lines will be used as mapping population for characterization, fine mapping and validation of drought tolerance. Results from this project will provide useful information and understanding of drought tolerance mechanisms and identify responsible genes and consequently develop new crop varieties that will combat drought.

LOUIE T. MURCIA
Ph.D. in Physics with specialization in Medical Physics
University of Newcastle, Callaghan, Australia

Working on some medical linear accelerator QA as part of the medical physics training.

ROMAN N. FORNESA
Master's in Zoonoses and One Health
Universitat Autonoma de Barcelona, Spain

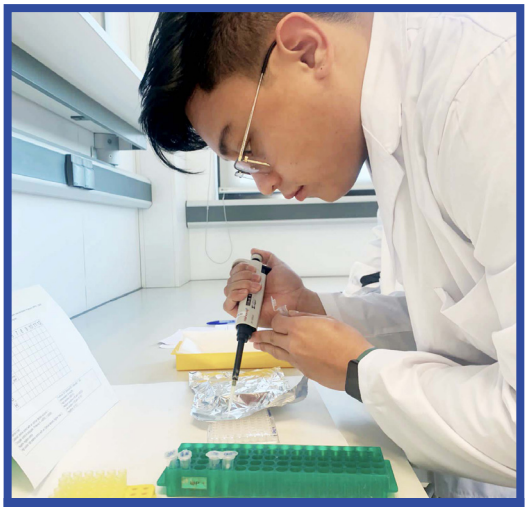
Synthesis of molecularly imprinted polymers (MIPs) by photopolymerization



Oral presentation in a summer school for "Advances in Biotechnology and New Horizons for Industry" at Île d'Oléron, France

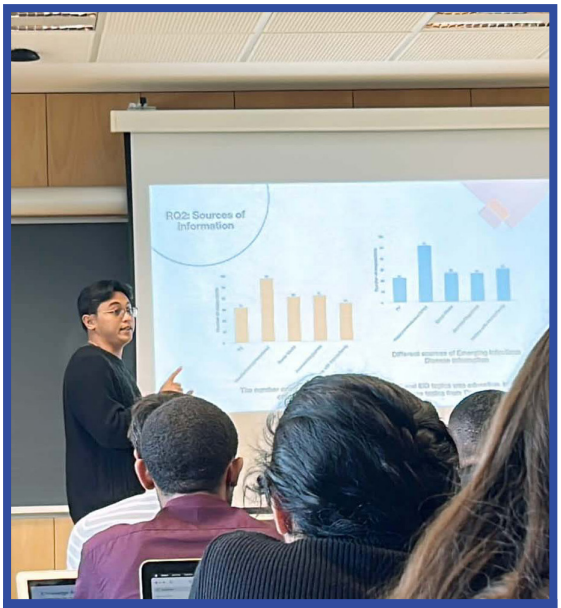
PAULENE PINEDA
DOST-SEI Scholar

Ms. Paulene Pineda presenting her study "Bovine Pangenome Assemblies" for her Major Review on October 10, 2022 explaining the advantage of using pangenome reference in comparison to a linear reference that improves variant calls and reduces alignment bias. Result of the study for the genome assembly of the swamp buffalo also showed an initial contig N50 of 85.5 Mb which is 4-folds higher to the next most contiguous assembly, UOA_WB_1 (contig N50 = 22.4 Mb), with final genome size 2.90Gb consisting of 192 contigs. Contig N50 is a standard metric to assess the contiguity of the assembly.

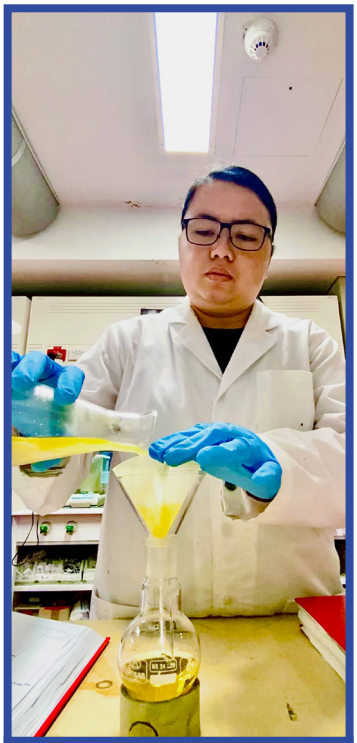


ROMAN N. FORNESA
Master's in Zoonoses and One Health
Universitat Autonoma de Barcelona, Spain

Working on a laboratory activity on Leishmania diagnosis and detection using enzyme-linked immunoabsorbent assay techniques.



Presenting the results of a survey-based study on the general knowledge level of Spanish residents on the impact of climate change on emerging infectious diseases.



This a typical day in the McCluskey research laboratory doing an aqueous reaction workup to get my desired reaction product.

SARI ROSE MURCIA
PhD in Chemistry (Medicinal Chemistry)
University of Newcastle, Callaghan, Australia

Assembling the column that I've used to purify and isolate my desired compounds.

The majority of my synthesis protocol requires a column purification as the last step since the synthesis will give me my desired compound with various side by-products, therefore a column purification is a must to isolate my desired product. A conventional bench column would take me a day to complete one purification but with the advanced automated flash purification system available in our research laboratory, I can manage to do 2-3 column purifications a day easily.

VERNALYN ABARINTOS
DOST-SEI Scholar

Presentation of scientific work at the Nanobioelectronics and Biosensors Group Spring Seminar 2022 held at Institut Català de Nanociència i Nanotecnologia (ICN2)

Presentation of scientific work at the Nanobioelectronics and Biosensors Group Summer Seminar 2022 at Institut Català de Nanociència i Nanotecnologia (ICN2)

ALBERT F. ASTILLERO
Scholar, DOST-SEI Foreign Graduate Scholarship
Master Program in Global Agriculture Technology and Genomic Science (Global ATGS)
National Taiwan University (NTU), Taipei, Taiwan

Attending online classes and doing homework while still under quarantine in a hotel in Taipei, Taiwan

Upon arriving in Taiwan in March 2022, the challenges of pursuing studies became real. Aside from the adjustment period from separation anxiety, attending classes and doing homework became more challenging tasks since those were conducted online while I was still undergoing the 21-day quarantine period. Following the quarantine period, classes were mostly held in person, but due to sporadic COVID-19 outbreaks on campus, they were sometimes held online.

Our program, the Master Program in Global Agriculture Technology and Genomic Science (Global ATGS), is a new multidisciplinary English-taught program offered by the National Taiwan University when the International College was established together with the Master's Program in Biodiversity (MPB). Today, the college has evolved, offering two more programs: the Master's Program in Smart Medicine and Health Informatics (Smart MHI) and the Master's Program in Disaster Risk Reduction and Resilience (MDR3).

In August 2022, we gathered to celebrate the graduation of the first batch of MS Global ATGS at the International College. During that time, I also had the opportunity to meet my adviser, Associate Professor En-Chung Lin, take a photo together, and discuss with him my thesis idea. Through his recommendations and guidance, I have deepened my ideas, and he also strives to find partner organizations and individuals that could help me conduct my thesis. He encouraged me to read several scientific journals and find related literature to establish my knowledge foundations on the proposed topic.

At the beginning of my second semester in September 2022, the International College arranged a presentation schedule attended by the faculty and students. In this event, my seniors presented their thesis progress while I presented my proposed thesis topic and initial accomplishments from the tasks assigned by my adviser. This selfie was taken while I was preparing my presentation slides.

This semester, I also have the opportunity to deliver a 3-minute thesis presentation as a requirement for the course on scientific writing and presentation. This exercise will be beneficial in a future career where presentations at scientific conferences and forums are common. In addition, my adviser told me to get a course on Python programming because this will be helpful for my thesis. Programming skills are also becoming inevitable nowadays due to the rise of digital agriculture, where artificial intelligence (AI) is a significant driving force. In my second year, there will be more challenges, and a lot more needs to be learned. However, this also reminds me to pursue and strive more, despite the sacrifices and sometimes sleepless nights. With this, I want to thank the DOST-Science Education Institute for their continued support.

ANTONIO RAYOS, JR.
DOST-SEI Scholar

Photo taken in the Life, Earth, and Environmental Sciences (LEES) Building of the University of Sydney (Sydney, Australia).

Last September, I went to the Australian National Herbarium to examine specimens that I need for my PhD project which involves extraction of DNA.

I returned there last November to do the sampling from the suitable herbarium specimens. During my visit, the curator of cryptogams, Dr. Christine Cargill, and her assistant Judith Carnow kindly assisted me. Dr. Endymion Cooper, who also works in the herbarium, gave me useful sampling tips. He used to work on the same family of non-vascular plants that I am studying for my PhD research which is a continuation of his previous efforts.

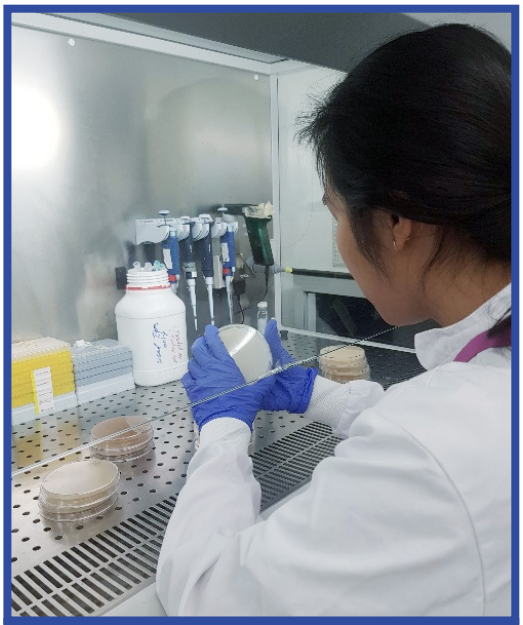
Last February, I paid a visit to the Allan Herbarium to examine herbarium specimens of the family that I am studying and then collect samples from the suitable ones. In the photo, with the help of a stereomicroscope, I was carefully separating the samples that I need from the unwanted samples which can possibly lead to erroneous data. During my visit, I met a lot of very nice people including the herbarium manager Dr. Ines Schonberger, and Dr. David Glenny, a very seasoned liverwort expert working in the herbarium. Dr. Glenny shared with me some bits of his knowledge about the taxonomic group that I am studying and helped me with the tricky spots during my sampling.

I am stationed in an office desk at Level 5 of the LEES Building where I spend most of my time as a PhD student under the supervision of Dr. Simon Ho who leads our research group, Molecular Ecology, Evolution, and Phylogenetics (MEEP), along with Dr. Nathan Lo. The computer on my desk (which is a property of the university) is a very significant part of my PhD candidature because it is where I keep important data for my PhD thesis, and it is also the computer that I use when executing tasks that cannot be done by my less powerful laptop.

ALBERT F. ASTILLERO
Scholar, DOST-SEI Foreign Graduate Scholarship
Master Program in Global Agriculture Technology and Genomic Science (Global ATGS)
National Taiwan University (NTU), Taipei, Taiwan

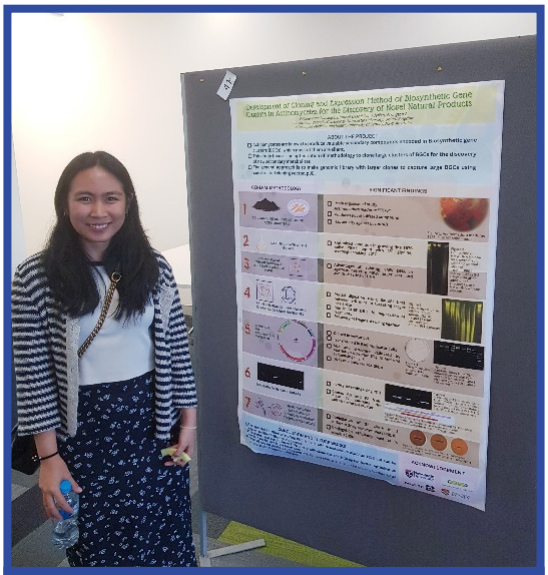
Dr Jose Prieto Garica.The MSc Natural Products Discovery Students of Liverpool John Moores University (Academic Year 2022-2023) in one of the laboratory sessions (Analytical Techniques in Natural Products Discovery) with professor and programme leader Dr Jose Prieto Garcia. Ten students are enrolled on the MSc programme, mostly coming from different countries (Nepal, India, Nigeria, Greece, Scotland, England, and the Philippines), two of whom are also international scholars (British Women in STEM) from Malaysia and Vietnam.

LJMU. Taken on January 27 2023, during the Scholarship Reception Event at Liverpool John Moores University, where the DOST SEI-FGS scholarship and other scholarships, including the Chevening, British Women in STEM, GREAT) received by fifteen other LJMU postgraduate student scholars, was acknowledged. Networking with other scholars and LJMU officials followed the event with some drinks and sumptuous snacks.



FELAINE SUMANG
DOST-SEI Scholar

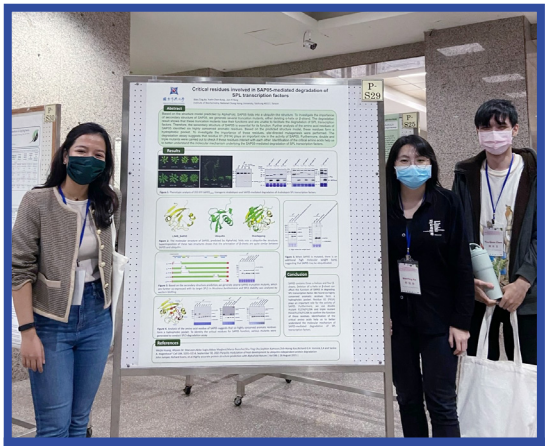
Genome editing of Streptomyces sp. DEM21308 by insertional mutagenesis of constructed pSET-152-dmlE to inactivate dmlE cluster to associate the cluster to the production of demurilactone A.



Dec 09, 2022 Annual ASM Meeting at University of Wollonggong, NSW, Australia - Presenting an poster about my main project which is titled "Development of Cloning and Expression Method of Biosynthetic Gene Clusters in Actinomycetes for the Discovery of Novel Natural Products". My presentation highlights the discovery of novel sulfated compound from one of our laboratory strains Actinomadura madurae T576 and the cloning method I developed using a novel cloning vector to capture a 120 kbp gene cluster responsible for the production of the said compound.

FRITZIE A. CAMINO
PhD Student, University of New England

I conducted pollinator exclusion experiments in 12 farm sites to determine which animal visitors were effective as pollinators of durian. Four treatments were set up for a 10 day, 20 day, 30, 40, 60 day observation period.



HELEN MEJIA
DOST-SEI Scholar

Participated in 16th International Symposium on Agricultural Biocatalysis and Biotechnology held in Taichung, Taiwan on November 9-11, 2022

VIP visit at CH biotech, world-class R&D company in agricultural biotechnological products. On my left is Prof. Wataru Sakamoto, Director of Institute of Plant Science and Resources, Okayama Japan. He is also the current Editor-in-chief of Plant and Cell Physiology Journal.

JAYSON FUMERA
MSc in Biosystems Engineering
Wageningen University & Research
Wageningen, The Netherlands

Team Aquathermia Discharge System. From left to right: (1) Mohanapandiyan Yoganathan, (2) Bart Moekestorm, (3) Commissioner Josco Van Duren, (4) Jayson Fumera, (5) Margit Smelt, (6) Ewan van Eijden and (7) Sonia Di Stefano.

During the last periods of the Academic Year 2023-2024 I took up Academic Consultancy Training (ACT) course where I worked in a team (Image 1) to design a cold-water discharge system for an Aquathermia System. Academic Consultancy Training (ACT) provides students with a unique opportunity to apply their Master level academic skills in a real-world setting by working in a team on a project for an external commissioner. In the case of our team, the project involved designing a cold-water discharge system for an Aquathermia plant, which extracts heat from surface of the water to heat buildings.

The project was crucial because the effects of discharging cold-water back into the waterbody, particularly on ecology, are largely understudied. This has made the legislative parties hesitant, and the installation process for Aquathermia systems difficult and time-consuming, thereby slowing down the energy transition. The team's solution involved reviewing current knowledge, identifying knowledge gaps, and recommending design solutions to address cold-water discharge issues and maximize benefits.

During the project, our team visited an operating Aquathermia system (Image 2), providing a deeper understanding and appreciation of the technology. Our team's final presentation at the commissioner's office (Image 3) was a success, leading to another invitation to present to the municipality of The Hague, Netherlands.

Overall, ACT offers students an excellent opportunity to develop professional skills in teamwork, project proposal development, communication, and personal development, while also contributing to real-world problem-solving and the energy transition.

Photo with Sakai Sensei (my supervisor) and my labmates (PhD students from Indonesia and Japan) (I am the 2nd person from the left (only girl)

JASTINE MAE JULITA GALANG
Civil and Environmental Engineering (Water and Environmental Engineering Laboratory)
Tokyo Metropolitan University

Last March 15-17, I was given the opportunity to attend and present my research on the Japan Society of Water and Environment (JSWE) Annual Conference in Matsuyama, Ehime Prefecture, Japan. There I was able to listen to various presentations about the latest research on Water and Environmental Engineering.

JERICKSON M. DELA CRUZ
MS degree-seeking student

Preparation of platinum electrode using the Bunsen burner.

Seminar class presentation last October 12, 2022

JO JANE D. ATOK
M.Sc. in Medical Biochemistry and Molecular Biology

I am Jo Jane Daisog Atok and taking up Master of Science in Medical Biochemistry and Molecular Biology at the Department of Biochemistry, Faculty of Medicine Siriraj Hospital, Mahidol University.

I am currently in the first year of my degree program and set to finish the required coursework by the end of the summer of the SY 2022-2023. For this semester, I am focused on further improving my lab skills prior to the start of my research study. This photo was taken at the Faculty of Science, Mahidol University, where I am taking one of my elective courses, that is Animal Cell Culture Techniques.

Recently, the Faculty of Graduate Studies (FGS), Mahidol University organized a Cultural Party for International Post Graduate Students. In the said event, students were able to represent their beautiful countries through Food, Fashion, and Talent. I, with other Filipino students, proudly represented the Philippines, and the "Baro at Saya" was recognized as one of the most fascinating costumes of the Night.

Apart from giving the students the learnings and providing the facilities they need to succeed in their respective fields, Mahidol University also encourages the development of their Professional and Personal Skills. The students must attend various soft skills, related to Communication and Language Skills, Leadership and Management Skills and among others.

Last September 24, 2022, I attended the Mahidol University Tour (MU Tour) and completed the Communication and Language Soft Skill.

I also attended the seminar and hands-on training on Basic Life Support led by the Faculty of Medicine Ramthibodi Hospital, Mahidol University and facilitated by the Faculty of Graduate Studies, Mahidol University. In this workshop, I was able to complete the required Health Literary Skills.

JOHN CHRISTIAN L. GAVIOLA
Master of Science in Geotechnical and Earth Resources Engineering
Asian Institute of Technology
Bangkok, Thailand

As I reflect on my first semester at the Asian Institute of Technology I cannot help but feel grateful for the incredible experience I have had. In 2022, I finished 12 units of courses relevant to my research study taught by distinguished professors in the field of geotechnical engineering.

Before starting this program, I had some doubts about studying in a foreign country, but those doubts have been completely dispelled. The faculty members and staff at the institute have been incredibly supportive, ensuring that I had all the resources I needed to succeed academically.

What I particularly enjoyed about the program was the emphasis on the practical application of the theories we learned in the classroom. The institute provides us with numerous opportunities to participate in fieldwork, lab work, and research projects that help us apply what we have learned in real-world settings.

I was also fortunate to be part of a diverse and dynamic cohort of students from all around the world, each with their unique perspectives and experiences. This cultural exchange has broadened my horizons and enriched my overall experience at the institute.

As I look forward to the next semester, I am excited about the challenges and opportunities that await me. I am confident that the skills and knowledge I have gained during my first semester will prepare me well for the future, and I am grateful for the opportunity to study at such a prestigious institution. Thanks to the DOST-Science Education Institute for this opportunity!

Meeting with other Filipino scholars in AIT.

JULIUS JIMENEZ
DOST-SEI Scholar

The scholar attended international conferences. One of these was the Water Security and Climate Change (WSCC) 2022. The conference has the key focus on Adaptation for Sustainable and Resilience Development that was held at Novotel Bangkok Future Park Rangsit, Thailand on 1-3 December 2022. There were also online conference in hybrid mode.

KIARA ESGUERRA
DOST-SEI Scholar

During my research activities, I made significant progress in my coding skills to the point where I can optimize the execution of my experiments. I also now feel more self-assured in using deep learning frameworks and repositories and tailoring them to fit my applications, implementing research papers into code, and implementing my research ideas such as deep neural network architectures, initialization methods, and training schemes. I learned about modern deep learning models used in other computer vision tasks such as segmentation and object detection, and have experienced implementing them. I consider this an achievement, especially as I only knew basic Python before the program.

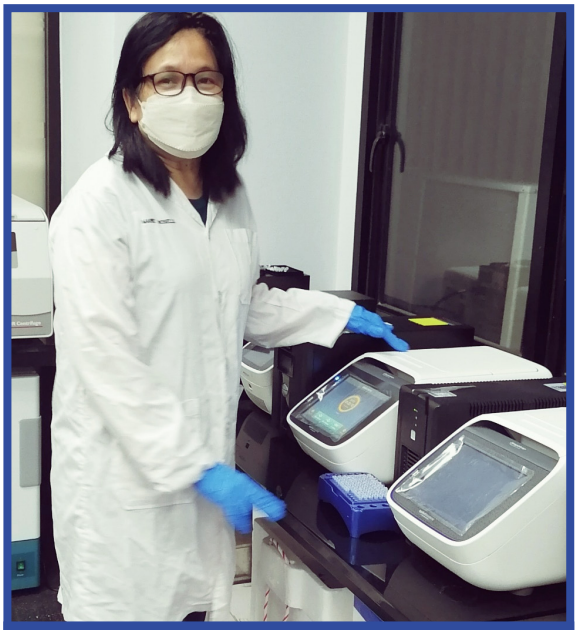
I participated in the Biannual Postgraduate Conference hosted by our department, which can be described as a simulation of a formal academic conference, as a way of getting experience and feedback. During the conference, I presented my paper titled "Sparsity-Aware Orthogonal Initialization of Deep Neural Networks", where I proposed a way to explicitly construct sparse neural networks without affecting its trainability, motivated by the increasing computational costs of training and deployment of deep neural networks.

I had the opportunity to work with more experienced people in the field of deep learning. From our interactions, I realized that I have barely scratched the surface of deep learning and that there's so much more to be explored, so many ways to solve certain problems, and so many problems that I have yet to understand. I realized that I cannot be lax in my study with how fast the field is growing, which is evident in the recent developments in generative models.

As most of my colleagues hail from other places, I also had the opportunity to learn about the problems in their home countries. I learned about how the diversity of our experiences can shape our motivations as engineers and scientists. I also learned how seemingly similar problems between our countries can have different answers, where some technological solutions may not be viable due to confounding reasons, some of which may even cause harm to already disadvantaged groups of people. I realized that technological progress cannot be viewed in isolation from its social milieu, and that any strides we undertake must not be undertaken for progress's sake alone.

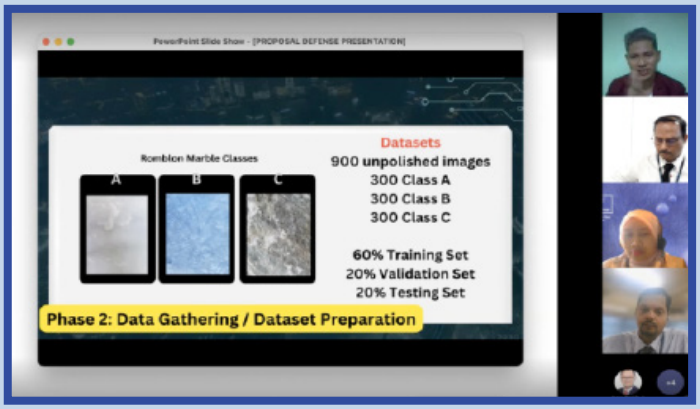
LOREIBELLE ABIAN
DOST-SEI Scholar

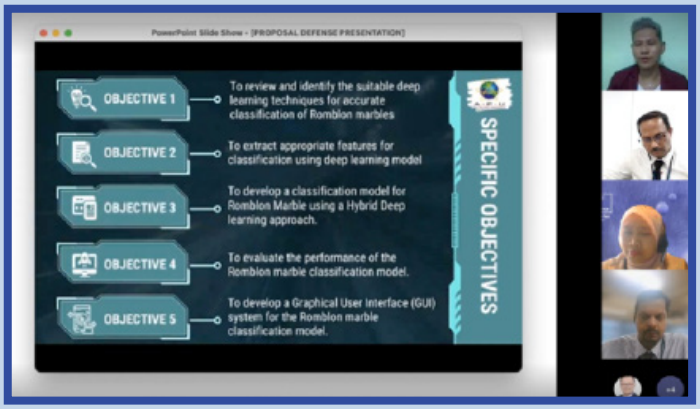
02 Feb. 2023 – A/Prof. Martin Saunders, Head of the Centre for Microscopy, Characterisation and Analysis at the University of Western Australia, presented the award during the closing ceremony.



MARIE ROSELLYNN ENGUITO
DOST-SEI Scholar

Laboratory Work for the studies on "Immunological Gene Diversity in Asian Elephants" and "Genome Organization of Transposons and Repetitive Sequences in Cobra" at Animal Genomics and Bioresources Laboratory at Kasetsart University, Thailand (Part of Thesis).





MARVIN RICK G. FORCADO
Ph. D. in Computing
Asia Pacific University of Technology and Innovation
Kuala Lumpur, Malaysia

This monthly activity is conducted to provide avenues for all the graduate student's research updates to be presented and critiqued by the Graduate School faculty and lecturers. I presented my research on Marble Classification using an enhanced Deep Learning Model based on Convolutional Neural Network optimized by Particle Swarm Optimization and Genetic Algorithm. With this activity, the graduate school was able to help the student with their research through their inputs and suggestions and, at the same time, keep track of and monitor the student's research progress.

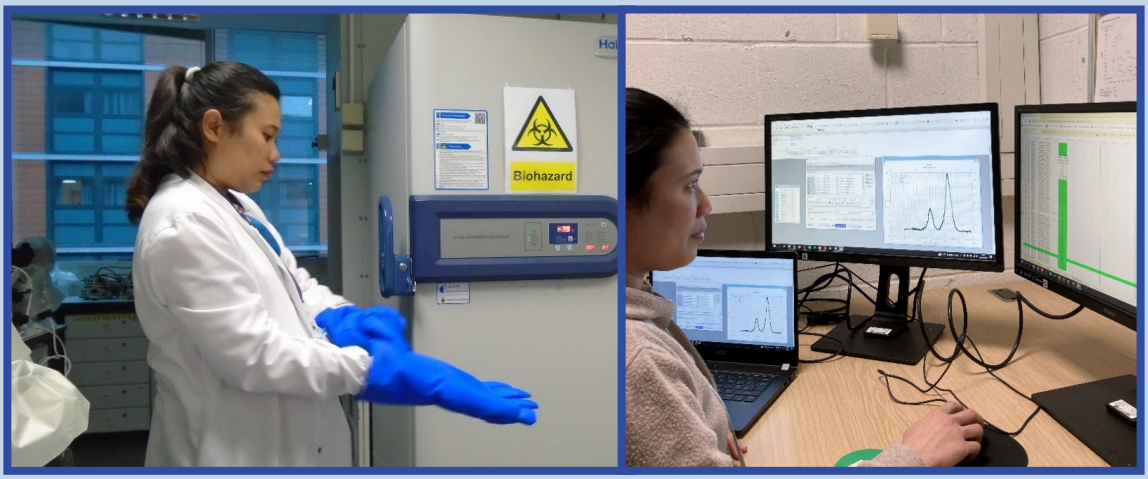
MICHAEL OLIVA
DOST-SEI Scholar

First Proposal defense with Dr. Thomas Patrick O'Daniel

Finishing the First phase of the proposal defense paper, Mr. Ricky Michael has presented his paper entitled, Artificial Intelligence and Extended Reality Experience-based Course Recommendation: An AI-XR model to Dr. Thomas Patrick O'Daniel which has received positive feedback from the Doctor.

MONABEL MAY A. BIRAO

PhD in Pharmacy and Biomedical Science – Year 3



On the 14th of February 2022, I became a member of the Microbiology society, previously named the Society for General Microbiology. It was formally established in February 1945, with Sir Alexander Fleming elected as its first President. The above photos show my attendance at the Microbiology Society Annual Conference 2022, 4–7 April, held at Belfast's International Convention Centre (ICC), Northern Ireland.

I created a library of 534 E. coli mutants stored in the Ultra-Low Temperature Freezer (-80°C) at the University of Portsmouth. About 239 cys-mutants expressing both MzrA and EnvZ (TM1) and 295 have both MzrA and EnvZ (TM2). I might extend to the cytoplasmic /periplasmic domain using Site-Directed Mutagenesis-PCR.

Immunoblotting analysis, generally considered to be a semi-quantitative analysis, as protein bands are measured with respect to one another, using ImageLab, ImageJ, and QtiPlot package softwares.

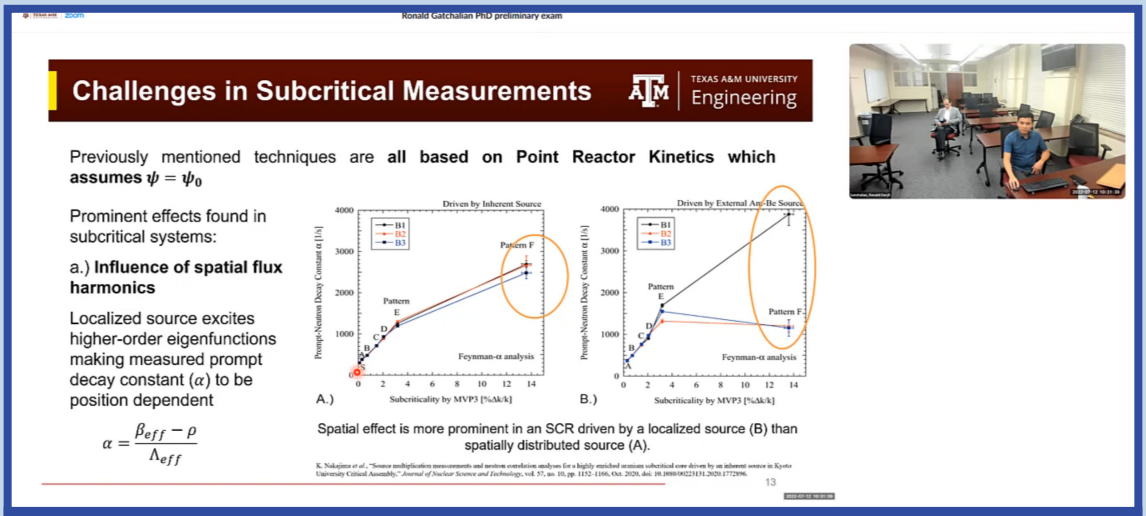
RONALD GATCHALIAN

DOST-SEI Scholar

Presentation of summary paper entitled "Machine Learning Approach in Determining Reactor Physics of Subcritical Reactors" last November 14, 2022, at the 2022 American Nuclear Society Winter Meeting and Technology Expo held at Phoenix, Arizona. The manuscript motivates the use of deep learning in predicting the reactor physics parameters of a source-driven subcritical system to augment the capabilities obtained from existing reactor physics evaluations.

Presentation of summary paper during the 2022 ANS Winter Meeting & Expo as part of the Reactor Physics I session. Ronald Daryll E. Gatchalian – scholar (at the podium)

Preliminary examination administered by my PhD advisory committee on July 12, 2022. The exam is comprised of two components: a written examination, and proposal defense. The presentation was delivered in hybrid mode.



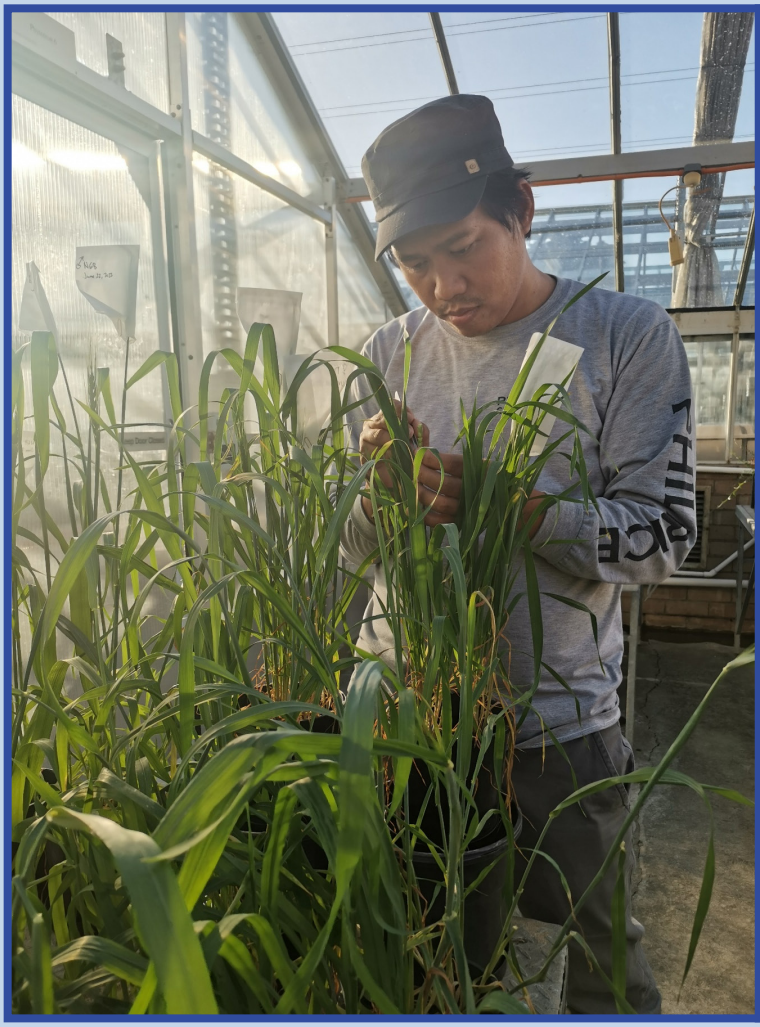
Presentation of summary paper during the 2022 ANS Winter Meeting & Expo as part of the Reactor Physics I session. Ronald Daryll E. Gatchalian – scholar (at the podium)

XAVIER CAGUIAT

DOST-SEI Scholar

Generation of population and seed multiplication are the preliminary steps in the project. Just like the wheat seed, Mr. Xavier Caguiat dreamed and was awarded the Department of Science and Technology-Foreign Scholarship Grant in 2019 and remained dormant and was not able to proceed to the University of Western Australia until June 2022 due to COVID-19 pandemic-related border closure. He was able to successfully commence his study under the guidance of Dr. Helen Hui and Professor Guijun Yan under the School of Agriculture and Environment (SAGE). He was involved in the generation of several advanced wheat populations. Mr. Caguiat was able to present his thesis proposal and was approved by the Graduate Research School (GRS). Preliminary orientation, induction to various laboratories and gas spray chamber were also successfully attended and access was provided to Mr. Caguiat. Mr. Caguiat also finished the requirement for new students such as a language evaluation called Diagnostic English Language Needs Assessment (DELNA) and for ethics and proper research conduct called Academic Conduct and Research Integrity (ACRI)

The project which he presented was approved was on the *"Genetic and molecular dissection of glyphosate tolerance in wheat (Triticum aestivum L.)"* which aims to analyze the genetic and molecular mechanism of glyphosate tolerance in bread wheat *(Triticum aestivum. L.)*, specifically it aims to: 1) screen wheat germplasm collection for glyphosate tolerance variation; 2) conduct genome-wide association studies for glyphosate tolerance; and 3) analyze P450 gene family for key transcription factors related to glyphosate tolerance in wheat. The results of the project will lay benchmark in development of herbicide tolerance in crops towards sustainability and no-tillage production system in the future.



Mr. Caguiat is involved in the crossing activities of advanced wheat populations in order to develop F2 Near isogenic lines under the glasshouse during winter in the University of Western Australia Plant Growth Facility in 2022. The crossing activity starts with emasculation of wheat spikes which is a laborious and time-consuming procedure. The picture shows Mr. Caguiat is employing clip emasculation which involves the removal of anthers from the florets with forceps following cutting of the glumes.

ABDULRAHMAN C. MANALUNDONG
MS in Sustainable Energy Transition
Asian Institute of Technology, Thailand

Studying overseas has given me opportunities not just to learn lectures and discussions within the four corners of a classroom and performing laboratories and research. More importantly, it has allowed me to expand my pedagogical network and linkage. My courses allow me to connect with other students of various nationalities and institutions. Furthermore, I have established linkages through other organizations via workshops and training. Moreover, my knowledge about sustainable energy was developed with our field exposure. Studying at a foreign institution like the Asian Institute of Technology (AIT) has been truly beneficial for me and a truly international experience.

One of the remarkable experiences I had in studying here at AIT was the workshop we had Mastering Energy Supply conducted for Isolated Areas (MESfIA). This workshop encompasses topics such as the electrification of isolated areas and the discussion of the courses offered by its partner institutions, such as AIT, regarding the developments of energy access in rural and isolated areas. Through this workshop, students were able to understand the ways and means of how to develop and improve energy access in such areas. This energy constitutes both access to electricity and modern, efficient, and clean cooking. Figure 1 below is a photo of the participants of the said workshop.

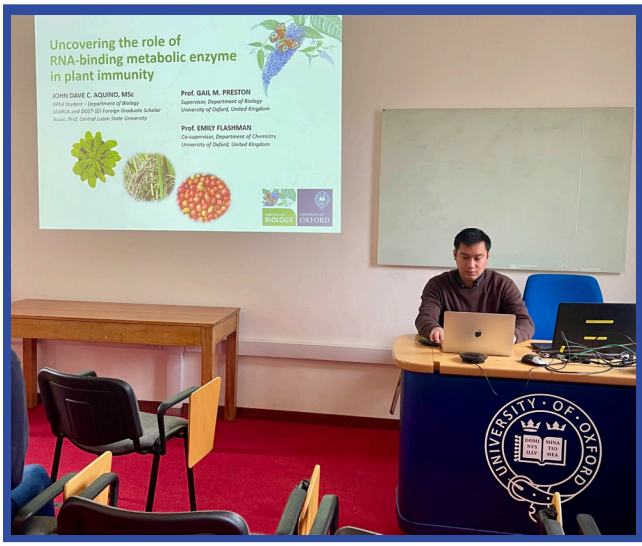
Posed for a group picture w/ MESfIA workshop participants

Joining in the field visit at Biomass Gasifier Powerplant

GARNER ALGO L. ALOLOD
Ph.D. in Applied Marine Biosciences
Tokyo University of Marine Science and Technology, Japan

Performing an experiment on bacterial isolates identification by 16srRNA amplification, cloning and sequencing.

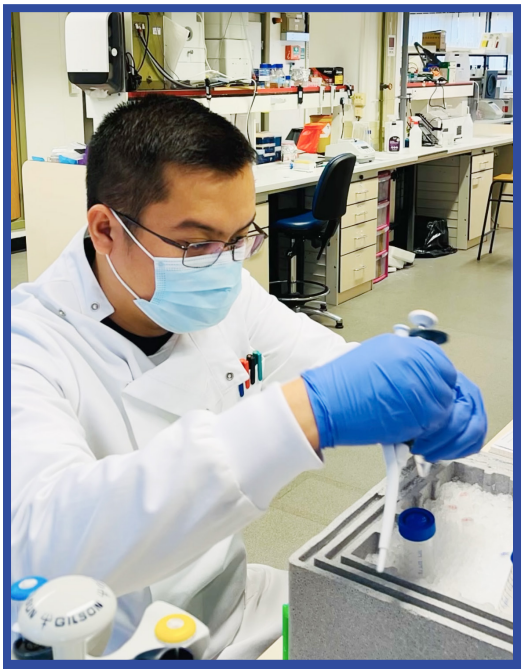
Participating at the Japan International Seafood Technology Expo last August 24, 2022 where countries across the world presented the latest technology in seafood innovation.



JOHN DAVE C. AQUINO
Ph.D. in Biology - Plant Sciences
University of Oxford, United Kingdom

Participating in a joint-lab meeting and presenting the research output and progress of the DPhil program at the Department of Biology – Plant Sciences, University of Oxford.

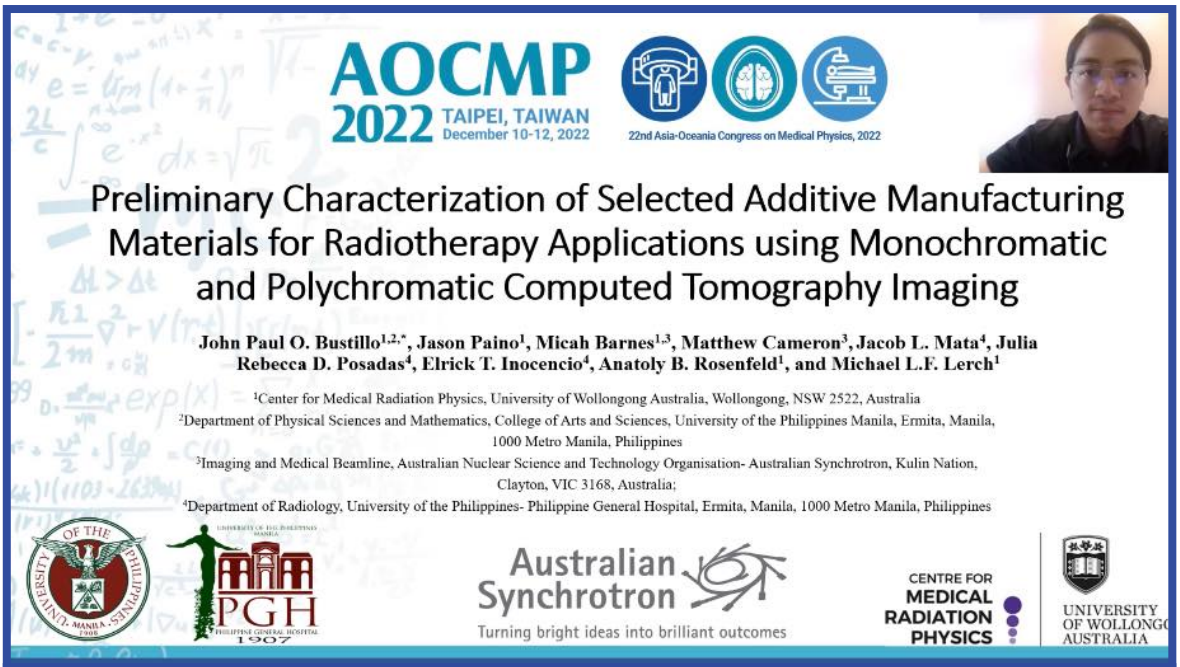
Immunity Phenotype Assay: *Preparing the plant materials for infection assay to investigate the pattern-triggered and effector-triggered immune responses.*



Protein Expression. *Preparing the plasmid for bacterial transformation using competent cells through heat shock at Flashman Lab in the Department of Chemistry, University of Oxford.*

JOHN PAUL O. BUSTILLO
Ph.D. Physics (Medical Radiation Physics)
University of Wollongong, Australia

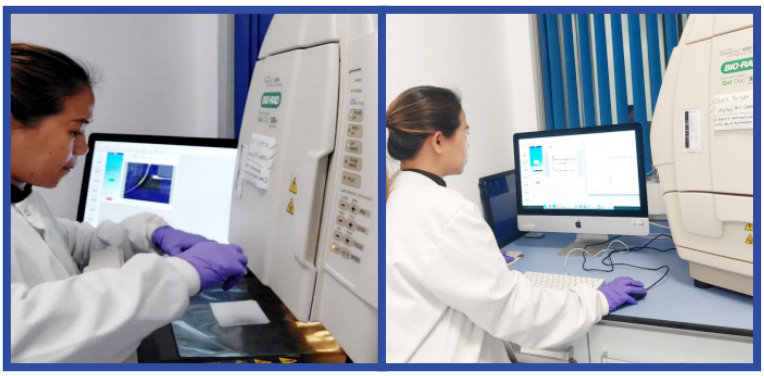
Installing the microbeam radiation therapy setup at the hutch 2B of the Imaging and Medical Beamline-Australian Synchrotron



Presenting his research in the 22nd Asia-Oceania Congress on Medical Physics in Taipei, Taiwan

MAETRESE ARIANNE J. BELEY
Ph.D. in Pharmacy and Biomedical Sciences
University of Portsmouth, United Kingdom

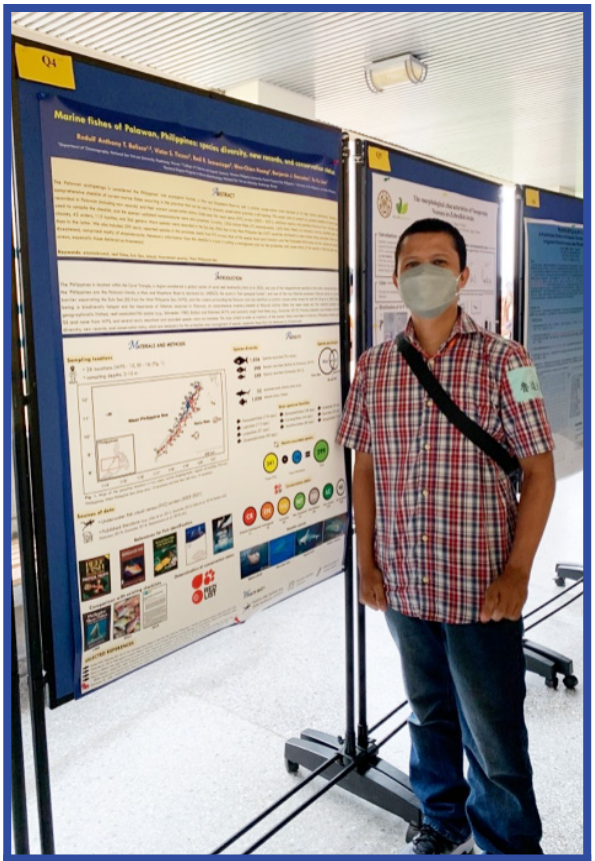
Preparing the samples and doing the experimentation through Western Blot technique



Performing image acquisition using Bio-Rad Image Lab Software

RODULF ANTHONY T. BALISCO
Ph.D. (Oceanography)
National Sun Yat-sen University, Kaohsiung, Taiwan

Doing fieldwork and sampling in a major fish market in Penghu County



Presentating his research poster during the 2022 Ichthyological Society of Taiwan Symposium held in the National Taiwan University in Taipei City.

DOST-SEI-UAlberta S&T Graduate Scholarship Program

In collaboration with the University of Alberta in Canada, the DOST-SEI implements the DOST-SEI-UAlberta S&T Graduate Scholarship Program.

The scholarship is open to doctoral or master's degree students who meet the academic requirements of the University of Alberta and its Faculty of Graduate Studies and Research (FGSR), subject to the availability of an appropriate graduate supervisor for the intended priority field of study.

The program aims to create mechanisms for master's and doctoral students from the Philippines to pursue graduate studies in priority fields and conduct research at the University of Alberta with support provided jointly through DOST-SEI scholarships and UAlberta.

In 2022, the DOST-SEI supported a total of 7 scholars: 3 MS and 4 Ph.D.

Table 21: Distribution of scholar by degree program at UAlberta

Degree Program	No. of Scholars Supported
MS	3
Ph.D.	4
TOTAL	**7**

DOST-SEI-UALBERTA SCHOLARS IN ACTION

DANIELITO L. DOLLETE
MS in Agricultural, Nutrition, and Food Sciences

Performing DNA extractions on bulk soil and rhizosphere samples for microbiome analysis on the relative abundance of soil microbes under drought stress conditions.

Recieving the Ali Navabu Graduate Student Travel Award during the 2022 Join Canadian Weed Science Society and Canadian Society of Agronomy Meeting, as among the top 5 graduate students research projects presented.

Working on a research project funded by Results Driven Agriculture Research (RDAR) with a partner industry that is a Canadian Plant-Based Milk manufacturer.

CHRISTY MARIE V. ALSADO
Ph.D. Agricultural, Food and Nutritional Science-Bioresource Technology

Meeting with the Philippine Ambassador to Canada, his excellency, Rodolfo Robles and Consul General Zaldy Patron to share their fields of research and experiences as students of University of Alberta.

PhilFrance-DOST Fellowship Program

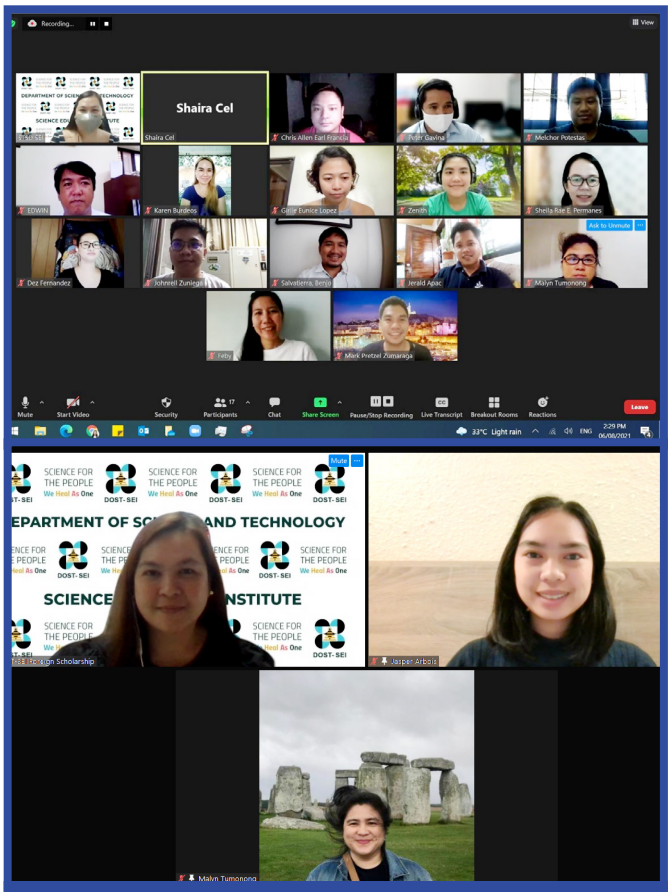
The PhilFrance-DOST Fellowship Program aims to foster the mobility to the French Republic of Filipino professionals working in academic, research or government institutions to pursue master's or doctorate degrees in the following priority S&T fields in public higher education institutions under the Ministry of National Education, Higher Education and Research of the French Republic:

- Agriculture
- Materials Science
- Bioengineering
- Natural Resources and Environment
- Bioinformatics (Medical)
- Nuclear Application on Health
- Biological Science
- Nuclear Medicine
- Climate Change
- Veterinary Science
- Forestry
- Virology
- Health and Medical Research

The DOST-SEI awarded new scholarships to 8 applicants for the pursuance of MS and Ph.D. in various public universities in France in 2022. Out of the number, 7 applicants availed the scholarship while 1 scholar withdrew from the program at the end of the year, the program supported a total of 21 scholars: 4 MS and 17 Ph.D.

Table 22: distribution of PhilFrance-DOST by degree program

Degree Program	No. of Scholars Supported
MS	4
Ph.D.	17
TOTAL	**21**



Orientation of the new qualifiers on the terms and conditions of the scholarship

CHRIS ALLEN EARL T. FRANCIA
Ph.D. in Chemistry
Université Côte d'Azur, Nice, France

Attending cross-disciplinary seminars on mathematics and biodiversity

Learning SEM and NMR through laboratory immersion

Supporting fellow PhD students by helping them in preparing samples

GLEEZA L. MANULAT
Ph.D. with specialization in Agriculture/ Climate Change
Université de Toulouse, France

Presentating research output at the 13th International Conference on Life Cycle Assessment of Food (LCA Foods 2022) in Lima, Peru on 11th to 14th of October 2022. The research is about integrating feed formulation methodology and Life Cycle Analysis to know the environmental benefits of converting residual biomass into new feed ingredients- a case study for incorporating new ingredients into pig feed.

JASPER T. ARBOIS
M1 International Track in Electrical Engineering
Université Paris-Saclay, France

"Studying in a different country is quite challenging for me; learning a new language and new culture; and learning to socialize with different people from different races. All of these are just few things that're quite difficult for me. But, day by day, little by little, I began to suit myself in. Spending months and days here taught me a lot of things in my practical life.

Learning French is one of my greatest achievements. Not totally fluent with it but at least I know how to speak it. I've been looking forward to that day when I'll be fluent in French; this mindset encourages me so much to learn French. We had classes in French and it really helps me a lot. Learning a foreign language is one of the things that won't perish.

Just a month ago, my first semester in my master's program year 1 ended. It really made me glad to pass that semester amidst all the difficult examinations. It was my first semester here, so I still didn't have any ideas how examinations are done here, such as what kind of examinations they give, what their grading system is, and many more. Everything was so new to me. A whole week of examination exhausted me a lot. But, after a month of waiting for the result, all my hardships were paid off. My perseverance in studying was not in vain. It was such a great accomplishment for me to get through that semester. Furthermore, I am very thankful to be given the opportunity to study in France. It encourages me to go on and gain new knowledge and experiences in my field in the next semesters to come.

Lastly, one thing I learned in my classes is to be simply willing to learn new things and lessons. I'm here to study and learn. I don't need to be afraid if I encounter topics I haven't encountered yet. I just need to study and not be afraid, after all I'm here to learn and gain knowledge and experiences. That's why, I always remind myself, "be willing to learn".

KRISTINE O. ABENIS
Ph.D. in Biology
Université Paul
Sabatier - Toulouse III, France

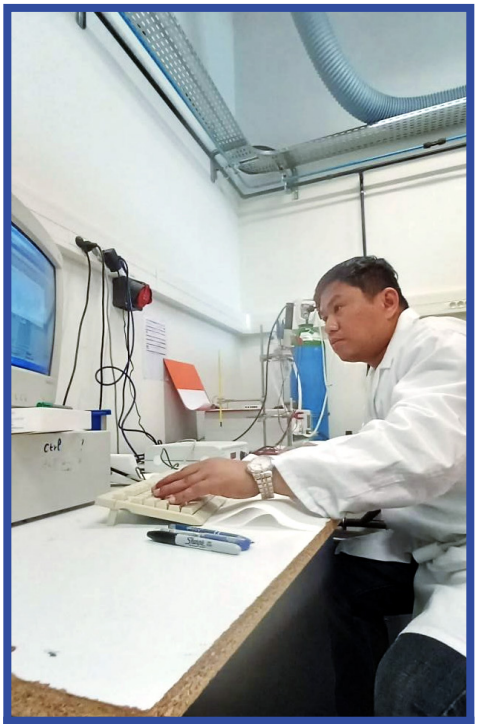
Feeding the control populations of Bombus terrestris with sucrose+acetone solution.

MICHAEL VINCENT T. TUBOG
MS in Environmental Hazards and Risk Management
Universitè Côte d'Azur, Nice, France

Joining the enrichment fieldwork of all students of MSc Risk (M1 and M2) at Vallée de Merveilles, Parc Mercantour, Alps-Maritime, France. The activity includes a discussion on the surface process including soil erosion in a glacial environment. 23-24 September 2022

MELCHOR J. POTESTAS
Ph.D. in Physics with specialization in Materials Science
Université de Limoges, France

Performing the reactive hot pressing in the thermal treatment room. The furnace for hot pressing is composed of sophisticated systems for heating, applied pressure, vacuum systems, gases, and cooling systems. In this experiment, we performed sintering at 1700 °C with a uniaxial pressure of 40 MPa under argon environment. The sintering time was programmed to 3.5 hours to allow the reaction of mixed powders inside the graphite die.



Performing electrochemical tests of the sintered materials. The electrochemical test was performed using a potentiometer as the source of power and a reaction vessel with an acid solution. The sintered sample was tested in this set-up to investigate its viability as a catalyst or as a storage material for hydrogen. The set-up was interfaced into the computer with GPES software to measure its electrochemical properties.

RUDOLPH VALENTINO A. DOCOT
Ph.D. in Sciences de la nature et de l'Homme: évolution et écologie Spécialité: Systématique
Muséum National d'Histoire Naturelle, Paris, France

At the Muséum National d'Histoire Naturelle Herbarium in Paris which is the host institution (A); the Royal Botanic Gardens Kew Herbarium in London, UK (B); the Linnean & Smith Herbarium in London, UK (C); the Royal Botanic Gardens Edinburgh Herbarium in Edinburgh, UK (D); and the British Museum Herbarium in London, UK.

DOST-SEI-Nagoya University Joint Scholarship for Ph.D. in the field of Bioagricultural Science

The DOST-SEI-Nagoya University Joint Scholarship for PhD in the field of Bioagricultural Sciences aims to provide opportunities to mid- and senior-level executives, faculty, researchers and young scientists engaged in research and technological innovations in agriculture from various government agencies and government-supported higher education institutions in the Philippines to pursue the Nagoya University (NU) Transnational PhD Program at Nagoya University implemented through the NU Asian Satellite Campus based at the Graduate School of UPLB.

The Ph.D. by Research program includes lectures, seminars, and student advising/ guidance in English at the Philippines satellite campus via TV conference system, Skype or Zoom. Major academic advisers are Japanese professors while members of the guidance committee are Filipino professors from UP or selected science and research agencies, as the case may be.

While research projects will be done in the Philippines, the scholars regularly travel each year to NU in Japan within the three-year period to confer with their academic advisers

and attend training/schooling. Likewise, the Japanese academic advisers regularly visit the project sites of the scholars in the Philippines. Upon completion of degree requirements, NU will confer the degree of Doctor of Agriculture Science to the student.

In 2022, the DOST-SEI awarded scholarships for the pursuance of Ph.D. in Bioagricultural Sciences degree at the Nagoya University in Japan.

Scholar-graduates returned to fulfill their service obligation

The DOST-SEI Foreign Graduate Scholarship Programs produced 13 graduates in 2022.

As part of the required service obligation, the scholars returned to the Philippines after completion of their MS/Ph.D. programs to render service along their fields of specialization for a period twice the length of time that they enjoyed their scholarship.

SAMANTHA ROSS M. ROQUE
MS in Surface, Electro, Radiation, and Photo-Chemistry (SERP+) Paris-Sud University, Orsay, France

Research Title: "Anisotropic plasmonic-semi-conductor nanocomposites for photocatalytic applications"

"I was able to go to France, Italy, and Portugal for my studies to study the latest techniques and technology in chemistry and material science. I am very grateful for the opportunity for fruitful experiences from some of the best European universities that the scholarship made possible for me. Despite the pandemic happening around the world, we were able to persevere and finish the program with only minimal delays. Overall, it was a very eye-opening and enriching experience that I and the other DOST scholars are very fortunate to have enjoyed."

JOSEPH P. LUMBA
MS in Surface, Electro, Radiation, and Photo-Chemistry (SERP+) Paris-Sud University, Orsay, France

Research Title: "Synthesis and Characterization of Cyclodextrin-Surface-Functionalized Film for Targeted Release and Biomedical Applications"

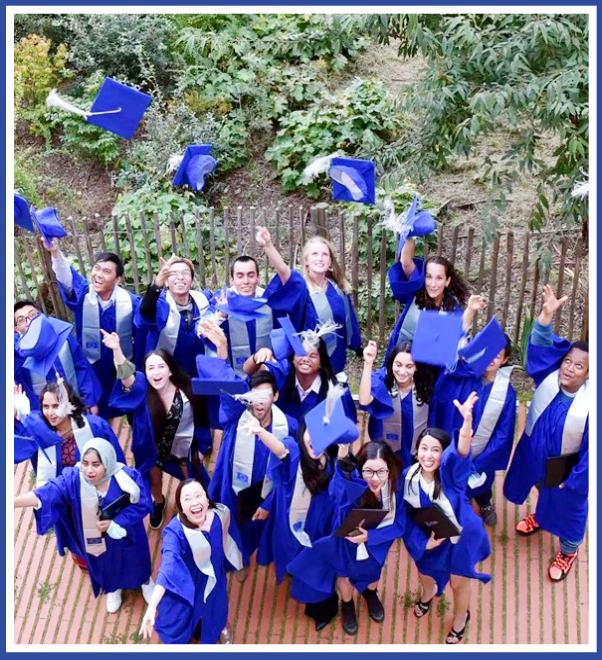
"The master's study that I took specialized in nanomaterials and surface modification of materials. I would not have had the opportunity to pursue this degree if not for the scholarship that I received; my family has been financially challenged since my father became severely ill and was no longer able to continue working as an appliance technician. Slightly delayed by the pandemic, I am glad to finish the master's and submit the final requirements in early 2022.

I am very grateful for the opportunity provided to me by DOST. I gained invaluable knowledge and experience from the lectures and laboratory work. I gained balanced training in both theory and practical techniques, especially in handling nanoparticles and polymeric materials. Such training is important to solve industrial problems in the Philippines, not just limited to biomedical applications but also in pharmaceuticals, cosmetics, etc. For instance, we can utilize these polymeric nanoparticles as containers for slowly releasing cosmetic agents and active ingredients when applied to the skin; in another example, they can be used to drastically alter the viscosity and stability of various emulsion-based products. I envision, hope, and work for a future where such scientific advancements in the western countries can be gained and utilized by Filipinos, improving our industries, and boosting global competitiveness – a thing made possible by DOST's initiative to encourage higher degree studies in international universities."

MAC MICHAEL M. RUBIO

MS in Chemistry (Analytical Chemistry/ Biochemistry)
North Carolina A&T State University, USA

Research Title: "DNA Biosensing of F508Del Mutation of the Cystic Fibrosis Gene by Reversible Addition-Fragmentation Chain Transfer Polymerization"



Testimonial about DOST Foreign Graduate Scholarship

I am Joseph P. Lumba, a previous Université Paris-Saclay, France student under the Surface, Electro, Radiation and Photo-Chemistry (SERP+) Program. I was granted a scholarship by the Department of Science and Technology (DOST) Foreign Graduate Program in October 2019. The master's study that I took specialized in nanomaterials and surface modification of materials. I would not have had the opportunity to pursue this degree if not for the scholarship that I received; my family has been financially challenged since my father became severely ill and was no longer able to continue working as an appliance technician. Slightly delayed by the pandemic, I am glad to finish the master's and submit the final requirements in early 2022.

I am very grateful for the opportunity provided to me by DOST. I gained invaluable knowledge and experience from the lectures and laboratory work. I gained balanced training in both theory and practical techniques, especially in handling nanoparticles and polymeric materials. Such training is important to solve industrial problems in the Philippines, not just limited to biomedical applications but also in pharmaceuticals, cosmetics, etc. For instance, we can utilize these polymeric nanoparticles as containers for slowly releasing cosmetic agents and active ingredients when applied to the skin; in another example, they can be used to drastically alter the viscosity and stability of various emulsion-based products.

I envision, hope, and work for a future where such scientific advancements in the western countries can be gained and utilized by Filipinos, improving our industries, and boosting global competitiveness – a thing made possible by DOST's initiative to encourage higher degree studies in international universities.

These photos were taken during the recognition ceremonies of the master's program. The event was attended by the students, university administrators, and professors from University of Paris-Saclay, University of Genova, and University of Porto.

These photos show my final results in the laboratory of the Faculty of Pharmacy, University of Paris-Saclay, as well as an image of myself in the laboratory. The vials containing solutions of white dispersion are polymeric nanoparticles of degradable polyesters. They were used as containers for targeted drug release and cancer imaging. The vials containing solutions of pink dispersion are rhodamine functionalized nanoparticles which have the double activity of target drug release and cancer tissue imaging.

This photo shows my reaction setup for the synthesis of copolymers containing degradable ester-based backbone. This polymer was the core material used in the nanoparticles featured in my thesis. The reaction is kept under nitrogen environment contained in the purple balloons.

Sending Agency	No. of Scholars Supported		Total
	Master's	Doctoral	
DOST-Central Office	2	-	2
DOST-NCR	4	2	6
DOST-CAR	1	1	2
DOST I	1	-	1
DOST II	1	1	2
DOST III	4	1	5
DOST IV-A	3	-	3
DOST IV-B	5	1	6
DOST V	2	-	2
DOST V	5	2	7
DOST VI	2	1	3
DOST VII	2	2	4
DOST VIII	5	-	5
DOST X	3	1	4
DOST XI	1	2	3
DOST XII	2	-	2
ASTI	1	1	2
FPRDI	3	1	4
FNRI	3	3	6
ITDI	9	3	12
MIRDC	4	-	4
NRCP	-	1	1
PAGASA	1	1	2
PCAARRD	14	5	19
PHIVOLCS	-	1	1
PNRI	7	6	13
PSHS-Main Campus	6	4	10
PSHS-CAR Campus	-	2	2
PSHS-Cagayan Valley Campus	2	2	4
PSHS-Calabarzon Region Campus	1	-	1
PSHS-Bicol Region Campus	1	-	1
PSHS-Western Visayas Campus	1	5	6
PSHS-Caraga Region Campus	5	1	6
PSHS-Central Mindanao Campus	2	1	3
PSHS-Southern Mindanao Campus	1	-	1
PTRI	1	-	1
STII	2	-	2
TAPI	2	-	2
TOTAL	**107**	**51**	**158**

DOST-HUMAN RESOURCE DEVELOPMENT PROGRAM (DEGREE COMPONENT)

With the relaxing of the COVID-19 protocols, a significant number of DOST employees have applied for the HRDP Graduate Degree Scholarship both for local and foreign scholarships.

Local Graduate Scholarships

This component of the HRDP provides scholarships to regular DOST employees for the pursuance of graduate studies in areas relevant to their job functions in local universities.

Table 23: Distribution of DOST-HRDP Scholars Supported by Sending Institution and Degree Program

The DOST Regional Offices spearheaded the revival of the Food Safety Team (FS) in their respective regions. To capacitate the members of the FS Team and provide them with the knowledge and skills necessary to handle issues on food safety, food security and risk management, the DOST-HRDP implemented the Master in Food Safety Management Off-Campus Program for 20 members of the FS Team. The program is in collaboration with the Philippine Women's University (PWU).

Foreign Scholarship Program

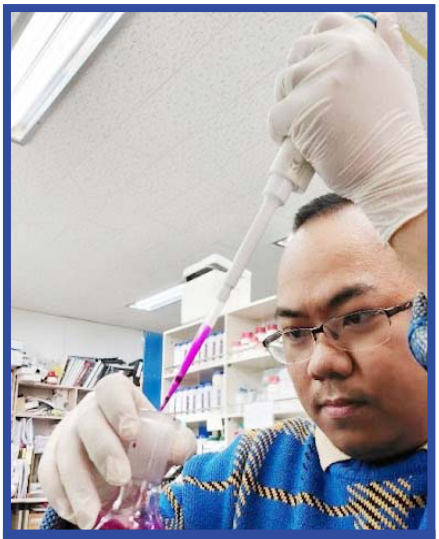
Foreign scholarships are awarded to selected DOST employees subject to availability of counterpart funding support from external sources and subject to the requirements of DOST and the sending agency.

In 2022, the DOST-HRDP approved five (5) new, in addition to two (2) on-going, scholars for the pursuance of their graduate studies in New Zealand, Hong Kong, South Korea, and Malaysia.

Mr. Bryan B, Ybañez of DOST VII while conducting research as part of the requirements for his PhD on Environment and Health at the Massey University, Palmerston North, New Zealand.

Table 24: Distribution of DOST-HRDP Foreign Scholars by Sending Agency and Degree Program

Sending Agency	No. of Scholars		Total
	Master's	Doctoral	
DOST-PES	1	-	1
DOST VII	-	1	1
FPRDI	-	1	1
ITDI	-	2	2
PNRI	1	-	1
PSHS-MAIN CAMPUS	-	1	1
TOTAL	**2**	**5**	**7**



Mr. Ian John L. Castro of ITDI working on his reasearch, "Detection of Aflatoxin B1 using lateral flow immunoassay". He is pursuing PhD in Food Science and Technology at the Yeungnam University, South Korea.

Ms. Donna S. Rebong of PSHS Main Campus while attending a class for her PhD in History of the Chinese University of Hong Kong (CUHK), Hong Kong, China.

Dr. Anniver Ryan P. Lapuz (seated 3rd from left) of the FPRDI at the Research Presentation for Graduates of the Transnational Doctoral Programs for Leading Professionals in Asian Countries of the Asian Satellite Campuses Institute, Nagoya University last September 22, 2022.

Table 25: Distribution of DOST-HRDP Self-Financed Graduates by Sending Agency and Degree Program

Sending Agency	No. of Scholars		Total
	Master's	Doctoral	
PTRI	1	-	1
PAGASA	1	-	1
NRCP	-	1	1
DOST-PES	-	1	1
DOST-III	2	-	2
DOST VIII	-	1	1
DOST-XII	**1**	**-**	**1**
PSHS-Western Visayas Campus	**1**	**-**	**1**
PSHS-Southern Mindanao Campus	**2**	**-**	**3**
TOTAL	**8**	**4**	**12**

Self-financed Graduate Degree

This HRDP component is available to all regular DOST employees who, during their employment at DOST, were able to obtain their advanced degrees as self-financed students. Recipients are granted Certificates of Merit and cash incentives amounting to P60,000.00 to P120,000.00 for completing Doctorate degree and P40,000.00 to P80,000.00 for Master's degree.

In 2022, DOST-HRDP awarded this incentive to 12 DOST employees who self-financed their Master's and Doctorate degrees.

Student Research Support Fund (SRSF)

The SRSF is a funding support provided to assist the scholars in the conduct of thesis/dissertation research and dissemination of research outputs, and incentive to their research adviser's in the form of mentors who ensure timely completion of their degrees.

In 2022, two scholars availed the Dissemination Grant. One of scholars paper was accepted for a presentation in an international conference.

Name of Scholar	Agency	Conference Title	Venue of Conference	Date of Conference	Research Title
Laranas, Jesselle S.	PCAARRD	Innovation for Resilient Agriculture Conference – 2022	Chiang Mai, Thailand	October 19-21, 2022	*"A Real-time Delphi Approach to Defining Agri 4.0 in the context of the Philippine Research and Development"*

Ms. Jesselle S. Laranas of PCAARRD during the presentation of her research at the innovation for Resilient Agriculture Conference-2022 in Chiang Mai, Thailand.

Another scholar's paper was accepted for publication in a refereed technical journal.

Name of Scholar	Agency	Journal	Research Title
Salang, Keith R.	PSHS-Caraga Region Campus	International Journal of Recent Advances in Multidisciplinary Research	*"Lived Experience of Pisay Scholars under the Distance Learning Modality: Adapting to Change"*

Table 26: Distribution of scholars completed their degrees in 2022

Degree	No. of Graduates		
	Female	Male	Sub-total
Master's	6	3	9
Doctoral	4	3	7
TOTAL	**10**	**6**	**16**

Scholar Graduates in 2022

Sixteen (16) DOST-HRDP scholars completed their degrees in 2022. These scholars have already reported back to their sending agencies and are now applying the expertise acquired from their advanced studies in the programs and projects they handle.

The following are testimonies of some scholar-graduates:

TESTIMONIALS

"...I would like to express my sincerest gratitude to DOST-HRDP and DOST-SEI headed by Dr. Josette Biyo for the scholarship and for providing the necessary documents which allowed me to travel to Japan to finish my PhD degree."

DR. ANNIVER RYAN P. LAPUZ
Doctor of Science in Bioagricultural Sciences under the Doctor of Philosophy in Transnational Doctoral Program for Leading Professionals in Asian Countries, 2022
Asian Satellite Campus (ASCI) - Philippine Campus, Nagoya University

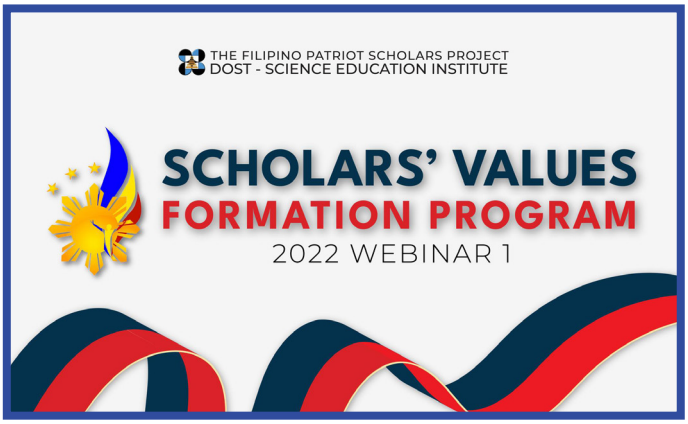
"Big thanks to the DOST-SEI team, under the leadership of Dr. Biyo, particularly the DOST-HRDP Committee Secretariat for their financial, technical, moral and humane support to me during my graduate education. Since late 2018, the Secretariat has been so helpful in answering my inquiries on how to obtain a DOST-HRDP scholarship. In 2019 when I finally got hold of a University acceptance, and subsequent DOST-HRDP scholarship, the Secretariat has been there, assisting me in every conceivable question I had when I was a student. This is a testament to how DOST-SEI has trained their personnel, and how the institution values its scholars. Finally, I would like to thank DOST, and DOST-PCAARRD for providing the means for me to get a graduate degree, one of which has been very helpful in the conduct of the work that I do, daily. Being a full time scholar paved the way for me to finish my degree in the least possible amount of time, given the challenges brought about by the pandemic in the middle of my scholarship. For this, I would like to thank the Filipino taxpayers as well. =)"

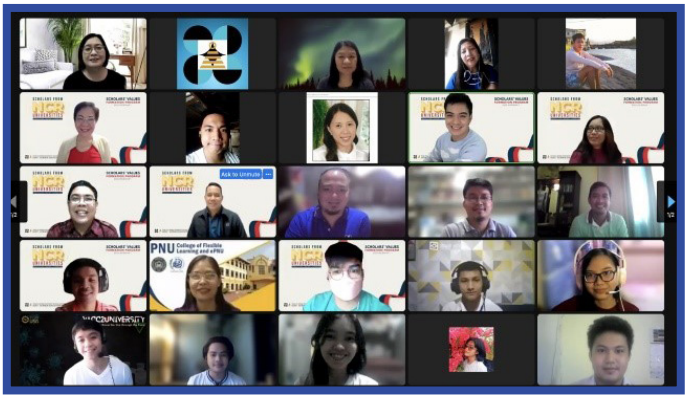
RUEL CARLO L. TANQUECO
Master in Development Management and Governance, 2022
University of the Philippines-Los Baños

SHAPING THE FUTURE SCHOLAR-LEADERS

In 2022, the Filipino Patriot Scholars Project remains steadfast in achieving its objectives of promoting patriotism, nationalism, and volunteerism among science scholars despite the challenges brought about by the COVID-19 pandemic.

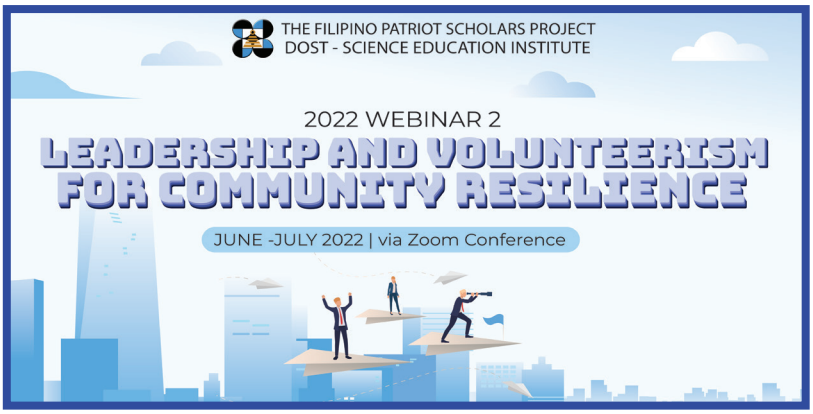
Noteworthy accomplishments of the project include conduct of webinars on Scholars' Values Formation Program, Leadership and Volunteerism for Community Resilience, a special webinar on Panitikan at Kasaysayan and the DOST-SEI Scholars Leadership Camp.





Scholars' Values Formation Program

From February to April 2022, the DOST-SEI through the Patriot Project hosted five (5) sessions of Webinars on Scholars' Values Formation Program. It was participated in by a total of 7,089 undergraduate scholars nationwide including MS and Ph.D. scholars under the Capacity Building Program in Science and Mathematics Education (CBPSME). Generally, the activity aimed at fostering patriotism among S&T scholars and instilling in them the core values of professional excellence, social responsibility, and servant leadership. Topics include the re-orientation of the DOST-SEI Scholarship Program as a Package of Opportunities, The Making of a Filipino Patriot Scholar, and the Core Values of a Filipino Patriot Scholar.



Leadership and Volunteerism for Community Resilience

The Patriot Project conducted a series of webinar on Leadership and Volunteerism for Community Resilience from June to August 2022. A total of 1,887 scholars nationwide participated in the activity in five (5) sessions. Talks include Understanding Leadership and Volunteerism in the Context of Patriot Resilience Framework and Collective Problem-Solving for Community Development. The activity intended to develop leadership among S&T scholars that is contextualized in participatory citizenship towards community and national development.

Special Webinar on Panitikan at Kasaysayan

Meanwhile, a special webinar on Panitikan at Kasaysayan was conducted on June 10, 2022, which tackled two (2) talks: Kamalayang Pilipino sa Espasyo ng Sining at Panitikan and the Development of Filipino Scholars and Nationhood. This webinar aimed to reawaken the Filipino consciousness and strengthen the Filipino identity among scholars and to contextualize leadership and volunteerism in terms of Filipino literature and history. A total of 461 scholars attended the webinar.

DOST-SEI Scholars Leadership Camp

In collaboration with the DOST Regional Offices and partner universities, the first-year implementation of the Scholars Leadership Camp has been a resounding success. The training ran for seven (7) legs from August to November 2022 in NCR, Northern and Southern Luzon, Visayas, and Eastern and Western Mindanao. It was participated in by a total of 474 undergraduate scholars, and 105 MS and Ph.D. scholars under the CBPSME.

The leadership camp was composed of workshops on self-awareness, core values of a Filipino patriot scholar, leadership skills, community organization, project management, and interactive teambuilding activities. The training also featured motivational talks on youth and democracy and the rights and responsibilities of young people in Philippine history. The leadership camp aims to provide scholars with a platform to learn, grow, and develop their full potential as young leaders who can contribute to nation-building. Specifically, it aims to capacitate the scholars with leadership and organizational skills; foster camaraderie and solidarity among science scholars; and strengthen linkages/networks to sustain volunteering initiatives for community development.

Funding of Scholarship Volunteering Initiatives

The Patriot Project funded project proposals that engage the Patriot scholars in volunteering activities and to train them on project management. The two (2) projects implemented by the scholars from Region I are worth noting. These were Project Youth Advocacy in Caring for the Aged and PWDs 2.0 or Project YACAP 2.0 aimed to support people with disabilities to promote their talents and skills; and Project Embark and Amplify their Voice or Project EmBrACE intended to raise awareness regarding violence against women and children (VAWC).

Conduct of Webinar on Identifying VAWC and its forms titled, "Reverence Not Coerce: A Line not to Traverse"

Another remarkable volunteering initiative supported and funded by the Institute was the SiClub Capacity-Building and Community Immersion by the scholars from Region IX. The project aimed to create a pool of scholars who are engaged and empowered through community immersion and project imagination.

DOST IX SICLUB General Assembly with the theme "DOST IX Patriot Scholars: Vanguards for Transformative Nation Building and Volunteerism

The DOST-SEI, through the Patriot Project, is committed to its goal of shaping the future of the nation by empowering S&T scholars to become active and responsible citizens of the country. It will continue to provide intervention programs to maximize the scholars' capabilities, inspire them to sustain and broaden their engagement in national service for inclusive national development.

CONTINUOUS REVIVAL OF MARAWI THROUGH STEM EDUCATION

The Department of Science and Technology-Science Education Institute (DOST-SEI) continues its support to Marawi City through the Bangon Marawi Program in Science and Technology Human Resource Development (STHRD). It is an immediate response of the DOST-SEI to rebuild the human and social infrastructures of Marawi City after siege in 2017. The program has provided scholarships for Marawi students enrolled in science, technology, engineering, and mathematics (STEM) courses in the undergraduate and graduate levels since 2018. The first batch of scholars started in the Second Semester of AY 2017-2018 while the second batch were awarded scholarships in the First Semester of AY 2019-2020.

The primary goal of the program is to provide scholarship grants to qualified second year college students who are immediate members of the families affected by the armed conflict or were displaced from their communities due to the Marawi siege in 2017. The program also intends to inculcate to the beneficiaries the love of country, strengthen their Filipino identity and citizenry, and deepen their trust and confidence to the Philippine government.

After five (5) years of program implementation, **81% of the BS scholars (73 scholars with honors), 21% of the MS scholars,** and **23% of the PhD scholars** have already graduated as indicated in Table 27:

Table 27: Distribution of Marawi students enrolled in STEM courses

Level	Total No. of Scholars Awarded	Graduated	Completion Rate
BS	436	353*	81%
MS	47	10	21%
PhD	13	3	23%
TOTAL	**496**	**367**	**74%**

** 3 Summa cum laude, 12 Magna cum laude and 58 Cum laude (with 1 early completer)*

Through The Filipino Patriot Scholars Project, the scholars participated in activities which aim to inculcate in them the values of nationalism and patriotism. A total of 45 (20 female and 25 male) scholars attended the DOST-SEI Leadership Camp on October 12-16, 2022 in Zamboanga City.

Considering its successful implementation, the DOST-SEI extended the program and conducted a pen-and-paper qualifying examination to 147 qualified second year college students enrolled at the Mindanao State University (MSU) Main Campus, MSU-Iligan Institute of Technology (IIT) and MSU-Lanao National College of Arts and Trades (LNCAT) on November 17, 2022 at the MSU Main Campus. Out of the said examinees, 72 qualified to the program.

Moreover, the Learning Resource Center (LRC) which was put up on September 27, 2019 at the MSU-Main Campus continues its operation to help the scholars in research and other academic activities.

DOST Secretary Renato Solidum Jr. emphasized the significance of human and social infrastructures in Marawi's rehabilitation. *"By restoring people's confidence in their abilities and assuring them that nothing, not even poverty, war, or a pandemic, can stop them from pursuing their dreams, we rebuild Marawi from within,"* he said.

Bangon Marawi scholars participated in the DOST-SEI Scholars Leadership Camp on October 12-16, 2022 at the Garden Orchid Hotel, Zamboanga City

Conduct of the DOST-SEI Bangon Marawi Program in STHRD Scholarship Examination on November 17, 2022 at the MSU-Main Campus, Marawi City

Learning Resource Center (LRC) at MSU-Main Campus, Marawi City

ASEAN ACT: ADDRESSING CHALLENGES TOGETHER THROUGH THE DOST-SEI SCHOLARSHIP

The Philippine government continues its support to the ASEAN region through the graduate scholarship program of the Department of Science and Technology (DOST) being implemented by the Science Education Institute (SEI). The Scholarship Offerings for ASEAN Researchers (Cambodia, Lao PDR and Myanmar-CLM) aims to provide MS and PhD scholarships in engineering and sciences to qualified young researchers from CLM. It is an offshoot of the 9th Informal ASEAN Ministerial Meeting on Science and Technology (IAMMST-9) held on October 29, 2016 in Siem Reap, Cambodia. The objective of the program is to promote human resource development for sustainable socio-economic development of the ASEAN region, particularly in CLM. The implementation of the program started in the Second Semester of AY 2017-2018.

To further strengthen its support to the ASEAN STI Partnership Contributions and to capacitate the human resources of CLM, DOST pledged additional twenty-four (24) scholarship slots to CLM, i.e. eight annually from 2019 to 2021, during the IAMMST-10 on October 19, 2018 in Cebu City. Hence, there are forty-one (41) scholars (27 MS and 14 PhD) under the program. Of the figures, 13 MS and 2 PhD scholars or 37% already graduated as of end of the First Semester AY 2022-2023 as shown below:

Table 28: Distribution of graduate scholars under CLM Program

Country	Number of Scholars		Graduated	
	MS	PhD	MS	PhD
Cambodia	12	-	5	-
Lao PDR	3	3	1	-
Myanmar	12	11	7	2
TOTAL	**27**	**14**	**13**	**2**

The remaining 14 MS and 12 PhD scholars are either still completing their coursework or doing their thesis/dissertation.

In September 2022, five (5) scholars (2 MS and 3 PhD) who are pursuing their graduate degrees at the University of the Philippines Los Banos (UPLB) in Laguna have arrived in the country following the guidelines on the face-to-face classes of the Commission on Higher Education (CHED). The others are in their respective countries while finishing their thesis/dissertation.

The year ended with a very important milestone on identifying the short-term impact of the program. The DOST-SEI conducted an Evaluation Study on the Implementation of Scholarship Offerings for ASEAN Researchers (Cambodia, Lao PDR and Myanmar - CLM) on December 3-6, 2022 in Cambodia, December 6-8, 2022 in Lao PDR and December 8-12, 2022 in Myanmar. The team was composed of Dr. Jayeel Cornelio as the Consultant/ Lead Researcher from Ateneo de Manila University (ADMU); and Mr. Peter Gerry Gavina, Chief Science Research Specialist (SRS), Ms. Susana Esquivel, Senior SRS, Misses Ma. Grace Sasota and Glennise Shyra Bayking, SRS II, from DOST-SEI.

The team interviewed 18 scholars (7 in Cambodia, 3 in Lao PDR, and 8 in Myanmar). Out of the 11 MS

scholars, 6 have already finished their degrees. On the other hand, among the 7 PhD scholars, 2 graduated in 2022.

The following have emerged after the interviews:

1. ***Favorable impact on graduate scholars.*** This may be assessed on three (3) levels. At one level, scholars shared significant improvements in their technical knowledge and skills. A scholar in public health shares that her exposure to medical concepts and practices at UP Manila has helped her with her work in rural communities in Cambodia. Second, career advancements are already evident. This is certainly true for those who have finished their degrees. One, for example, now heads a unit in a pediatric hospital. A scholar from Myanmar, after finishing his graduate degree at UPLB, is now a project lead of an international organization working with farmers in far-flung areas. But it is also true for those who have just begun their graduate degrees. According to one scholar from Cambodia, having been awarded a scholarship grant made him eligible to head his university's laboratory. Third, scholars have also noted considerable enhancements to their soft skills, including speaking with confidence and communicating in English. This of course varies, with those who had the opportunity to join classes onsite benefiting more than those who did not. These developments are all worth noting since most of the scholars come from impoverished backgrounds, including in rural areas.

2. ***Resilience.*** The scholars expressed the difficulty of studying with Filipinos, whom they considered advanced in their fields and presentation skills. One scholar said, "*whereas Filipinos walk, we run.*" This experience has not deterred scholars from catching up. Among all scholars, only one has been terminated after a term from the grant for failing to meet university policy on grade requirement. Two who have applied for leave of absence because of language barrier and mental distress in Manila, have been reconsidered. These testify to the effective selection of scholars who are not only high-potential but also resilient.

3. ***The appeal of Philippine universities.*** The reputation of Philippine universities prior to receiving their scholarship grants varied for our informants. While some were aware of the country's research productivity, others were completely unfamiliar. Among the latter, interest in Philippine universities was the result of directly knowing someone else who also received a CLM scholarship. In any case, all our informants are now in agreement that the research productivity of UP Manila, UP Diliman, UPLB, and DLSU are worth aspiring to by their institutions in their respective countries. Based on this feedback, there is a potential for the Philippines to position itself as an education destination for potential graduate students from the region.

4. ***Patriotism.*** CLM scholars are laudable for their commitment to nation-building in their respective countries. This means that they are not predisposed to migrating elsewhere after having finished their degrees. Those who have already finished are now back in their countries. For some, commitment to nation-building means advancing their chosen fields for their countries. Two PhD scholars are pursuing work on hydroponics and robotics in the hope of introducing these technologies in local industries. Several scholars are also in the field of teaching and have found the experience in graduate school a model for implementation in their local institutions. For example, one scholar has built a laboratory in his own university patterned after the policies and practices of his own workspace at DLSU. Another scholar wishes to establish exchange partnerships between universities in the Philippines and Laos so they are exposed to the latest developments in mechanical engineering. According to him, *"one person cannot change the country, but having more people interested in engineering can shape the progress of Laos."* This is true too even for those in Myanmar, where scholars are confronted with political uncertainties. A PhD graduate from UPLB has shared that *"I will still stay here because this country needs educated people."* She is now working with an agricultural NGO.

5. ***Points for improvement.*** As this is the first time that this scholarship scheme has been implemented, many processes for foreign students should be enhanced. Comments have been raised by the scholars for dedicated administrative assistance for relocation, covering visa application, accommodation, and other needs. On the part of DOST, benchmarking may be done with other funding institutions like SEARCA and IRRI. With respect to the scholarship grant itself, scholars have also requested possibilities for bridging programs related to English and foundation courses related to their degrees and increase their monthly stipend to 30%. To cover inflation and medical insurance.

The DOST-SEI will continue its commitment to help CLM in the development of S&T human resources for the ASEAN region.

Interviews in Cambodia

Photo at the Philippine Embassy in Phnom Penh, Cambodia (from left first row: Glennise Shyra Bayking, Ma. Grace Sasota, Sophirak Nou, Ambassador Maria Amelita Aquino, Samoun Nam, Susana Esquivel, Sotheara Kong; from left second row: Sovannmony Lay, Peter Gerry Gavina, Dr. Jayeel Cornelio and Cheanhchiayseyha Nourn)

Interviews in Lao PDR

Photo at the Philippine Embassy in Vientianne, Lao PDR (from left: Glennise Shyra Bayking, Ma. Grace Sasota, Peter Gerry Gavina, Third Secretary and Vice Consul Jorge Philippe Arjona, Lue Xiong, Susana Esquivel, Sane Souvanhnakhooman and Dr. Jayeel Cornelio)

Photo at the Best Western Green Hotel, Yangon, Myanmar (from left: Niño Balladolid, Tuntun Oo, Than Thun Aung, Aung La Pyae, Zayar Soe, Third Secretary and Vice Consul Rainelda Mendoza, Chargé d'Affaires, a.i. Enrique Voltaire Pingol, Peter Gerry Gavina, Susana Esquivel, Glennise Shyra Bayking, Ma. Grace Sasota and Dr. Jayeel Cornelio)

PHILIPPINE – CALIFORNIA ADVANCED RESEARCH INSTITUTES (PCARI) SCHOLARSHIPS PROJECT

The PCARI Scholarships Project primarily aims to provide for capacity building of researchers, faculty and students of Philippine HEIs in line with the DOST's National Science and Technology Plan (NSTP) priority areas. Specifically, it aims to develop a critical mass of scientists, technologists and innovators with the capacity to generate and translate technologies into innovations.

The year 2022 was yet another challenging year for most of the local scholars. The emergence and continued impact of the pandemic prevented them from returning to the universities and laboratories to work on their thereby prolonging their time to graduate.

It was a different experience for scholars at the University of California, who despite the setbacks, triumphantly graduated and returned to the Philippines to render their scholarship service obligations.

Table 29: Number of continuing local MS scholars by university

University	No. of Scholars
UP Diliman	29
UP Los Baños	2
De La Salle University	1
Mapua University	1
TOTAL	**33**

Table 30: List of continuing foreign PhD scholars

Name	Degree Program	University
Alben Rome B. Bagabaldo	PhD in Civil and Environmental Engineering	University of California Berkeley
Joy N. Carpio	PhD in Civil and Environmental Engineering	University of California Berkeley
Marc Francis M. Labata	PhD in Environmental Systems	University of California Merced
DJ Darwin R. Bandoy	PhD in Integrative Pathobiology	University of California Davis

MARC FRANCIS M. LABATA
PhD in Environmental Systems, 2022
University of California Merced

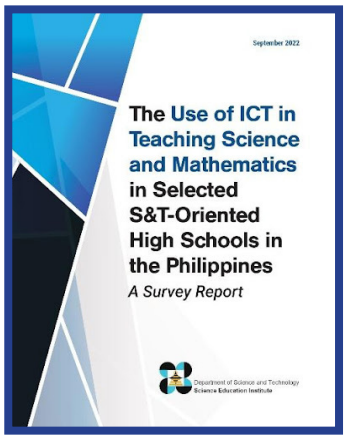
Dissertation Title:
"Promoting Energy Sustainability through Fundamental Study of Precious Metal Catalysts for Fuel Cells and Electrolyzers"

"My experience with the PCARI scholarship was perfect. They offered me a good learning experience having been able to go to California and pursue higher education. SEI was pivotal in helping me achieve my goal of being able to obtain my Ph.D. degree as they provided me with very generous financial support. This initiative is an excellent opportunity for our country to advance in the field of science and technology. I highly encourage everyone to avail of any scholarship opportunities from SEI and be part of the solution to our country's problem."

DJ DARWIN R. BANDOY, DVM
PhD in Integrative Pathobiology, 2022
University of California Davis

Dissertation Title:
"Epidemiological Inference from Pathogen Genome Data"

"The PCARI One Health scholarship has been instrumental in allowing me to pursue my Ph.D. at UC Davis, the number one veterinary school in the world. My research focused on using whole genome sequences of pathogens and machine learning in biological data analysis, and the resources available at UC Davis have been unparalleled. The faculty members are experts in their respective fields and have provided invaluable guidance and support throughout my studies. The access to cutting-edge technology and state-of-the-art facilities has allowed me to push the boundaries of what is possible in this field and make meaningful contributions to the scientific community. I am honored to be a part of UC Davis and am confident that the education and experiences I have gained here will be valuable for the rest of my career."



THE USE OF ICT IN TEACHING SCIENCE AND MATHEMATICS IN SELECTED S&T-ORIENTED HIGH SCHOOLS IN THE PHILIPPINES

The 2022 survey report of the DOST-SEI on *"The Use of ICT in Teaching Science and Mathematics in Selected S&T-oriented High Schools in the Philippines"* intended to establish baseline information on how Information and Communications Technology (ICT) is being used in teaching Science and Mathematics (S&M) subjects in selected S&T-oriented high schools in the country.

The study specifically aimed to know how teachers integrate ICT in S&M teaching and dig deeper into the processes of integration, as well as the factors contributing to the level of ICT usage in S&M teaching.

A total of 325 Science and Mathematics teachers, 16 school principals, and 16 computer coordinators were purposively sampled from 16 S&T-oriented high schools. Using a mixed method approach, data on the use of ICT in teaching Science and Mathematics were collected through survey questionnaires and focus group discussions (FGD).

Aiming to explore how ICT can be utilized to improve the teaching practices of high school S&M teachers, the DOST-SEI assured that the findings of this study can:

a) be used as a basis for assessing the capabilities and skills of S&M teachers in the use of ICT as an educational tool;
b) provide relevant information on the ICT training needs of teachers in public high schools;
c) be used to conduct further studies on the extent of ICT application of public high school teachers; and
d) describe how ICT is integrated in the current S&M teaching practices in selected S&T-oriented high schools.

Most importantly, results and insights of the study can help education stakeholders address existing gaps in ICT integration in STEM Education. Moreover, findings may be used to craft policies that address barriers impeding S&M and non-S&M teachers' use of ICT in teaching.

Below are the key findings of the study:

On ICT resources and facilities used by Science and Mathematics teachers in selected S&T-oriented high schools

- Desktop or laptop computers, computer laboratories, printers, internet, and digital projectors were the commonly used ICT resources.
- School intranet was the least used ICT facility while digital cameras, which were not readily available, were also shown to be rarely used in teaching Science and Mathematics.
- The majority of the respondents also owned ICT resources, which they use in teaching Science and Mathematics, particularly: desktop/laptop computers; e-mail accounts; home internet; printers; and digital cameras.
- An increase in the availability of ICT resources owned by the schools was seen to facilitate ICT integration in the whole education process.

On ICT knowledge and skills of Science and Mathematics teachers

- Based on the ICT skills set identified by the respondents, the mean ICT skills index garnered was 50 out of 84, with a standard deviation of 23. This means that the level of ICT skills of respondents is intermediate and heterogenous. Hence, while some were fair to quite knowledgeable in ICT, some had little to no knowledge about it.
- Among the ICT applications, word processing and file navigation were the basic suite used by more than 90% of S&M teachers.
- Around eight out of ten S&M teachers used spreadsheets, presentation software, the Internet, and email.
- More than half of the respondents never used applications for database management, with more Mathematics teachers indicating that they have not integrated the use of databases in their teaching.

On access to ICT-related training of Science and Mathematics teachers

- Very few to less than half of the respondents took up ICT integration-related trainings such as training on how to integrate technology with the education curriculum, incorporating ICT in teaching and learning, and subject-specific training with learning software for specific content goals.
- Less than half of the respondents also underwent training on Internet use and general applications.
- Majority of the said trainings were arranged by their schools, which they found to be effective as applied in their teaching practice.
- Teachers with better access to ICT resources tend to have a higher level of competence in using ICT than those with poor access. Teachers with more professional development training were also likely to have a higher level of ICT skills.

On attitude toward ICT of Science and Mathematics teachers

- Based on the attitude toward ICT index, the mean score was 36 out of 44, with a standard deviation of 6.79. This means that the level of attitude toward ICT is high and relatively homogenous.
- Overall, most of the respondents appeared to be optimistic about the potential benefits of using ICT in teaching Science and Mathematics.
- Data depicted teachers' tales in using ICT resources to prepare lessons as they help visualize complex topics like Advanced Chemistry, as well as in requiring students to create outputs in video format. While attitude can be related to the teachers' level of training and access to ICT resources, it can also be linked to their appreciation of ICT's value in teaching and learning.

On personal and professional use of ICT among Science and Mathematics teachers

- Results indicated that a significant number of respondents used ICT at least weekly to create materials for student use, e.g., handouts, tests; access research and best practices for teaching; and communicate with colleagues/other professionals.
- Most Science and Mathematics teachers described the application of ICT in the classroom as a useful resource to impact the learning competencies of students in many areas of the education curriculum, with more Science teachers leaning towards this positive regard for ICT.

On application of ICT in the classroom

- A significant number of respondents described the application of ICT as a useful resource that impacts some areas of the curriculum; improves students' skills in the use of ICT; and has an extensive influence on what students learn and how they learn.
- When it comes to the frequency of incorporating student use of ICT to achieve certain learning outcomes, on average, only the item on *"finding about ideas and information"* falls under the level of 'weekly' frequency. The average frequency of incorporating student use of ICT to achieve learning outcomes related to 21st century skills, such as analyzing information, learning to work, collaborating, and expressing themselves clearly, falls under at least once per term only.
- With regard to the frequency of using ICT-related tools in teaching, the respondents used the general office suite, such as Word, Excel, and Powerpoint Presentation software, social media or networking sites, and digital learning resources, more often than tutorial/exercise software, cloud computing, and other software applications.

On student assessment outcomes using ICT

- Approximately four out of ten Science and Mathematics teachers were discovered to have never integrated the use of digital portfolio for student assignments to achieve learning outcomes as evidence towards student achievement, as well as the use of ICT programs, materials, and applications that enable assessment to be customized toward specific learning needs.

On ICT integration by Science and Mathematics teachers

- Teachers who had better access to ICT resources and received more professional development training exhibited a more positive attitude toward ICT and demonstrated higher ICT competence compared to teachers with limited access to these resources and trainings.

On predictors of ICT competence of Science and Mathematics teachers

- It can be inferred that high ICT competence is prevalent among S&M teachers who are male, single, younger; have higher positive attitude toward ICT; able to use ICT resources; and have more experience in professional development trainings.

On predictors of ICT integration in teaching Science and Mathematics

- More integration of ICT in teaching Science and Mathematics was observed among teachers who are single; have greater positive attitude toward ICT; have higher ICT competence; and have more available ICT resources in their schools.

On ICT environment of schools

- Twelve (12) out of the 16 principals reported that their respective schools strongly encouraged and supported all teachers to utilize ICT and engage in professional learning opportunities.
- When it comes to the accessibility of technology applications in schools, general office suite, mobile devices, email accounts for teachers/students, communication software and equipment and hands-on materials were found to be available in most of them. However, tutorial/exercise software, data-logging tools, smart board/interactive whiteboard and simulations, modeling software, and digital learning were the identified technological tools needed yet not available.

Regarding the attitude of principals towards ICT, almost all of them strongly agreed that ICT provides students with efficient and valuable presentation and communication tools to support their learning.

On ICT-related obstacles to pedagogical goals according to school principals

- Insufficient internet bandwidth or speed was identified to be the primary obstacle to promoting the use of ICT in teaching Science and Mathematics. This was followed by the insufficient number of computers connected to the Internet, inadequate digital educational resources for instruction, and lack of ICT tools for Science laboratory work.

On ICT resources and facilities used by Science and Mathematics teachers

- As reported by the school computer coordinators, the number of computers/laptops ranged from 250 (Region II) to 374 (NCR). Likewise, the number of computers/laptops connected to the Internet ranged from zero (Region XI) to 258 (Region VI).

The findings of this study could be utilized to craft policies that address the barriers hindering S&M teachers' use of ICT in teaching. Given the importance of the teachers' ICT competency and attitude toward ICT as predictive factors, pre-service and in-service teacher education can also be evaluated to determine if they effectively address these aspects. This can forward the need for the Commission on Higher Education (CHED) to develop more responsive pre-service curricula and the Department of Education (DepEd) to establish programs for continuing professional development, equipping teachers with the ability and confidence to use ICT in their practice. Additionally, policies to computerize (Department of Education, DO 78, series of 2010) and provide public schools with Internet connectivity (Department of Education, DO 46, series of 2011) should be assessed and aligned with teachers' competencies and capacities to optimize both their skills and ICT tools.

MIGRATION OF SCIENCE AND TECHNOLOGY HUMAN RESOURCES: TEMPORARY AND PERMANENT MIGRANTS, VOLUME 4

Aiming to examine the extent of Science and Technology (S&T) skills migration, the DOST-SEI had been conducting a continuing policy research study on the international migration of Filipino S&T professionals - *"Migration of Science and Technology Human Resources: Temporary and Permanent Migrants."* The latest publication, which was released in 2022, equates to the study's fourth volume—presenting the updated accounting of S&T Filipino migrants, both temporary and permanent overseas workers, until 2018. This study was composed of two segments - 1) Newly-hired OFWs with S&T occupations: Temporary migrants and 2) Emigration of Science and Technology-educated Filipinos: Permanent migrants. The former refers to international migration of

Filipinos with S&T occupations, while the latter focuses on Filipino migrants with S&T education.

The study presented an overview of the status of international migration of S&T human resources in the Philippines, thereby providing empirical data that could be used as a basis for formulating policies that would lessen the negative impacts of S&T skills migration. Additionally, this study could serve as an essential opportunity for institutions to encourage and motivate the returning contract workers to impart their improved S&T skills and apply such to the needs of various industries.

This study employed a descriptive analysis of the secondary data processed from the databases of Philippine Overseas Employment Administration (POEA) and Commission on Filipinos Overseas (CFO) in 1999-2018 and 1981-2018, respectively.

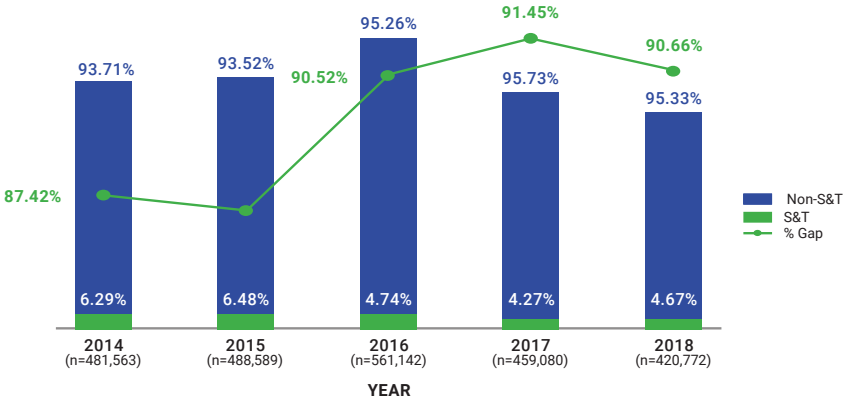
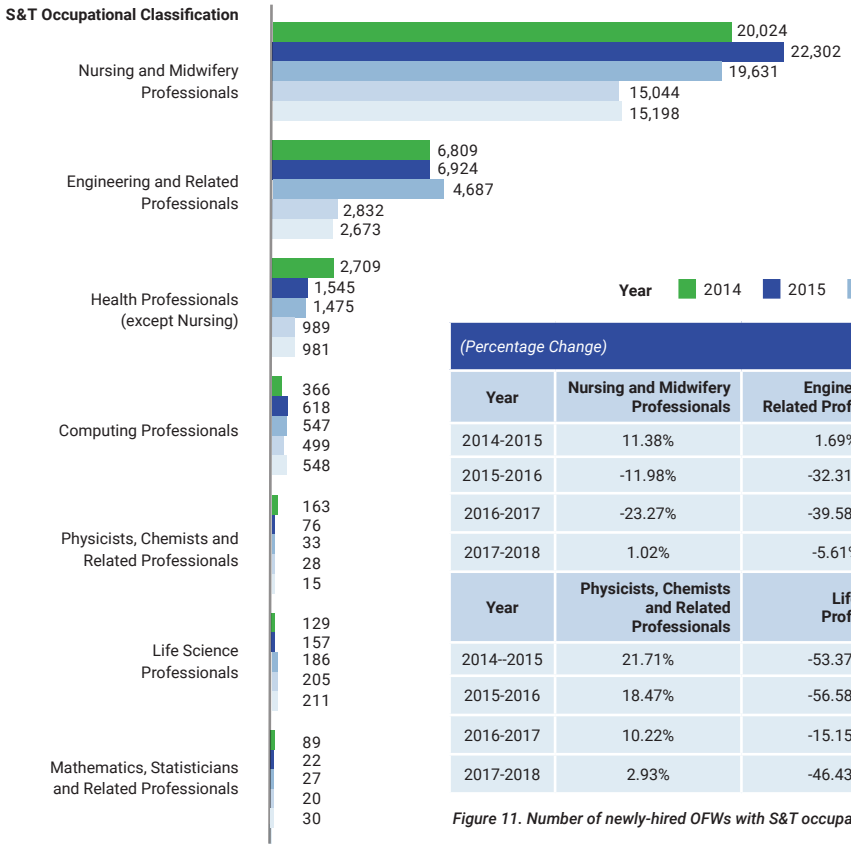


Figure 10. Number of newly-hired OFWs by S&T and Non-S&T occupations, 2014-2018 (Data Source: POEA)

The first part of the study revealed that out of the 2.41 million newly-hired OFWs in 2014-2018, only 5.30% (128,000) were identified to be part of the S&T workforce *[Figure 10]*. Between this period, 2015 held the largest outflow, which then declined by 2016 through 2018.

Nursing and Midwifery, and Engineering and Related Professionals constituted the largest proportion of the S&T Filipino workforce abroad, with a combined percentage share of 90.87% (116,000). They were followed by Health and Computing and those that were in the fields of Physics and Chemistry, Life Sciences, and Mathematics and Statistics Professions *(Figure 11)*.



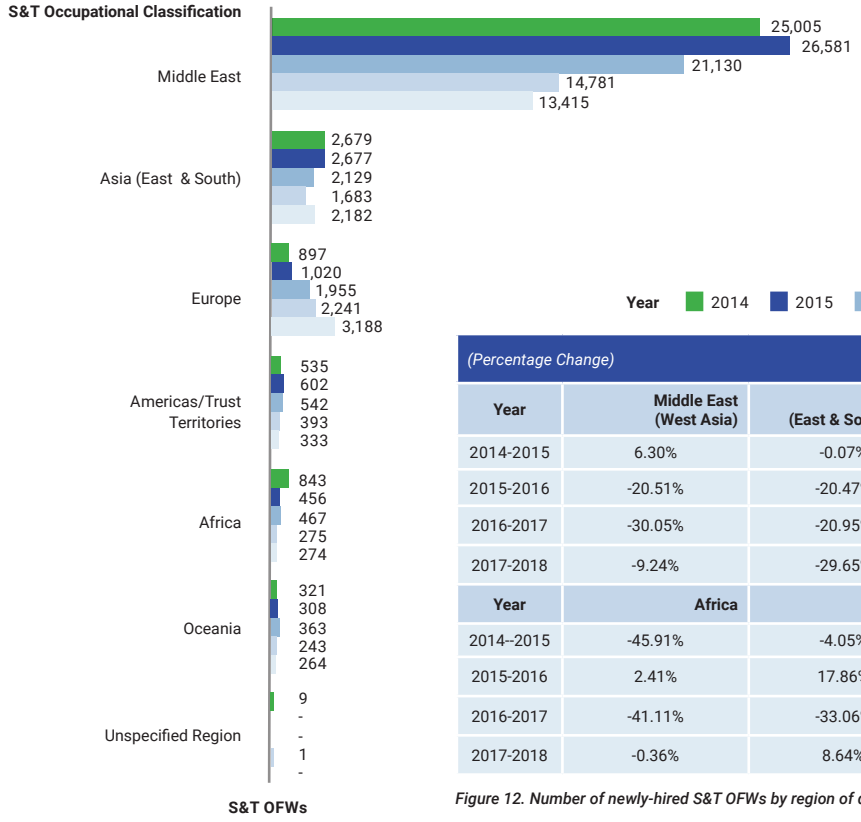
(Percentage Change)

Year	Nursing and Midwifery Professionals	Engineering and Related Professionals	Health Professionals except Nursing	Computing Professionals
2014-2015	11.38%	1.69%	-42.97%	68.85%
2015-2016	-11.98%	-32.31%	-4.53%	-11.49%
2016-2017	-23.27%	-39.58%	-32.95%	-8.78%
2017-2018	1.02%	-5.61%	-0.81%	9.82%

Year	Physicists, Chemists and Related Professionals	Life Science Professionals	Mathematicians, Statisticians and Related Professionals
2014--2015	21.71%	-53.37%	-75.28%
2015-2016	18.47%	-56.58%	22.73%
2016-2017	10.22%	-15.15%	-25.93%
2017-2018	2.93%	-46.43%	50.00%

Figure 11. Number of newly-hired OFWs with S&T occupation, 2014-2018 (Data Source: POEA)

The Middle East had the highest concentration of newly-hired OFWs with S&T occupations in 2014-2018 composing 78.97% (101,000) of the distribution. This was followed by Asia (8.88%) and Europe (7.28%). *(Figure 12).*



(Percentage Change)

Year	Middle East (West Asia)	Asia (East & South Asia)	Europe	Americas/Trust Territories
2014-2015	6.30%	-0.07%	13.71%	12.52%
2015-2016	-20.51%	-20.47%	91.67%	-9.97%
2016-2017	-30.05%	-20.95%	14.63%	-27.49%
2017-2018	-9.24%	-29.65%	42.26%	-15.27%

Year	Africa	Oceania	Unspecified Region
2014--2015	-45.91%	-4.05%	-100.00%
2015-2016	2.41%	17.86%	-
2016-2017	-41.11%	-33.06%	-
2017-2018	-0.36%	8.64%	-100.00%

Figure 12. Number of newly-hired S&T OFWs by region of destination, 2014-2018 (Data Source: POEA)

As shown in Figure 13, among the seven S&T occupations, Nursing and Midwifery Professionals (74,914), and Health Professionals (4,571) were those largely dominated by women having a combined count of 79,485. This is equivalent to 65% of the total number of S&T professionals, which if translated would equate to three for every five S&T OFWs being female and particularly employed in the health and medical field.

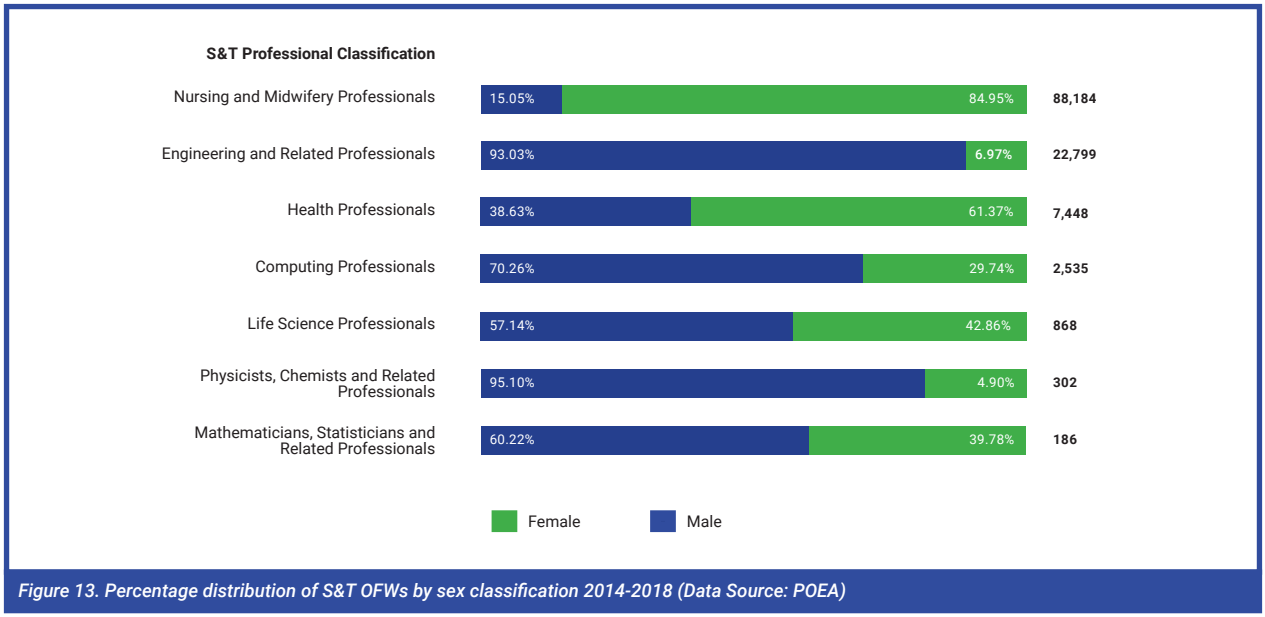


Figure 13. Percentage distribution of S&T OFWs by sex classification 2014-2018 (Data Source: POEA)

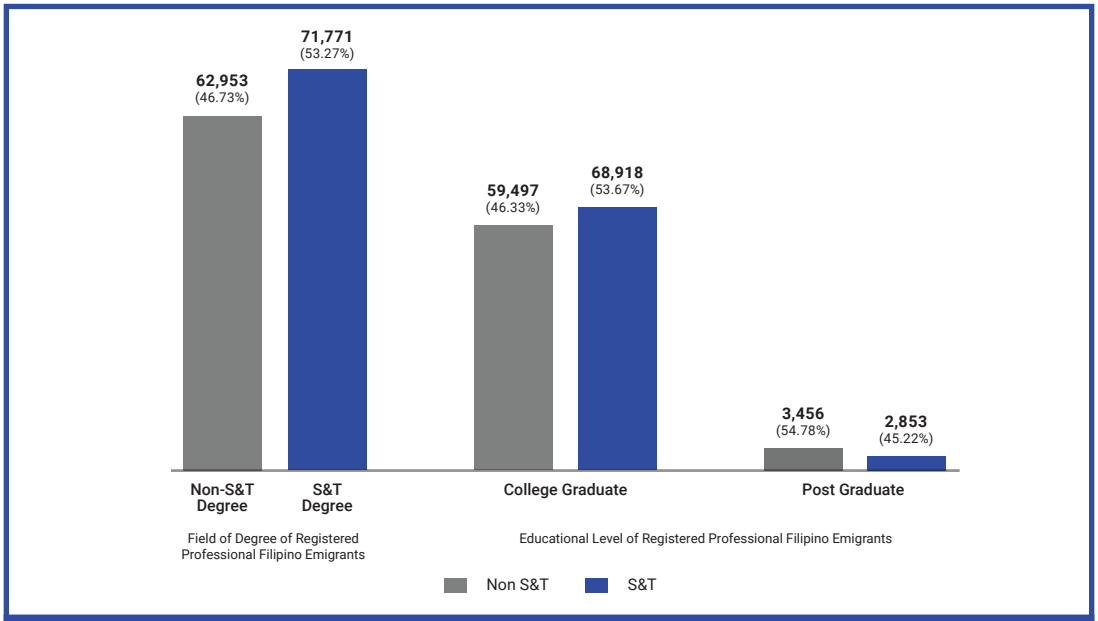


Figure 14. Distribution of Registered Professional Filipino Emigrants with S&T and Non-S&T degrees, 2014-2018 (Data Source: CFO)

The findings on the second half of the study showed that majority of the professional Filipino emigrants had S&T specializations. College degree graduates (96.02%) composed the majority of these professionals. Meanwhile, less than five percent were with post-graduate degree holders (3.98%) in the S&T fields *(Figure 14)*.

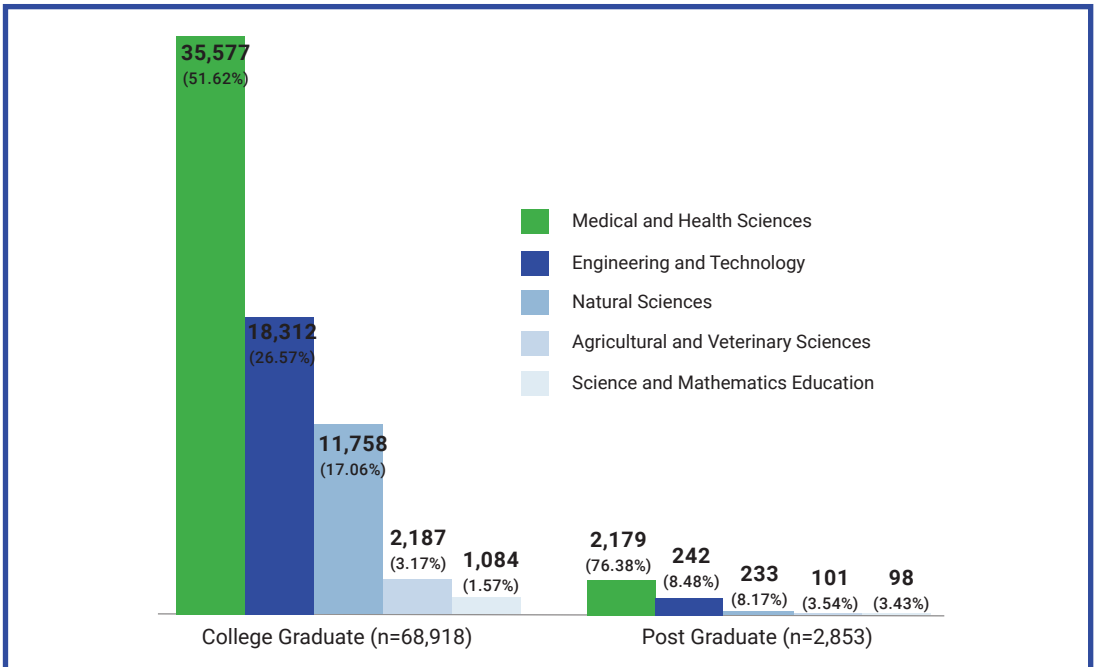


Figure 15. Distribution of Registered Filipino Emigrants by S&T Broad Classification: College and Postgraduates Degrees, 2014-2018 (Data Source: CFO)

Figure 15 shows that among Filipino emigrants with S&T backgrounds, more than half were college graduates (51.62%) in the Medical and Health professions. And more than three fourths of post-graduate degree holders (76.38%) were in the same professions. Engineering and Technology, Natural Sciences, Agriculture and Veterinary Sciences, and Science and Mathematics Education were the other top professions reported in terms of frequency.

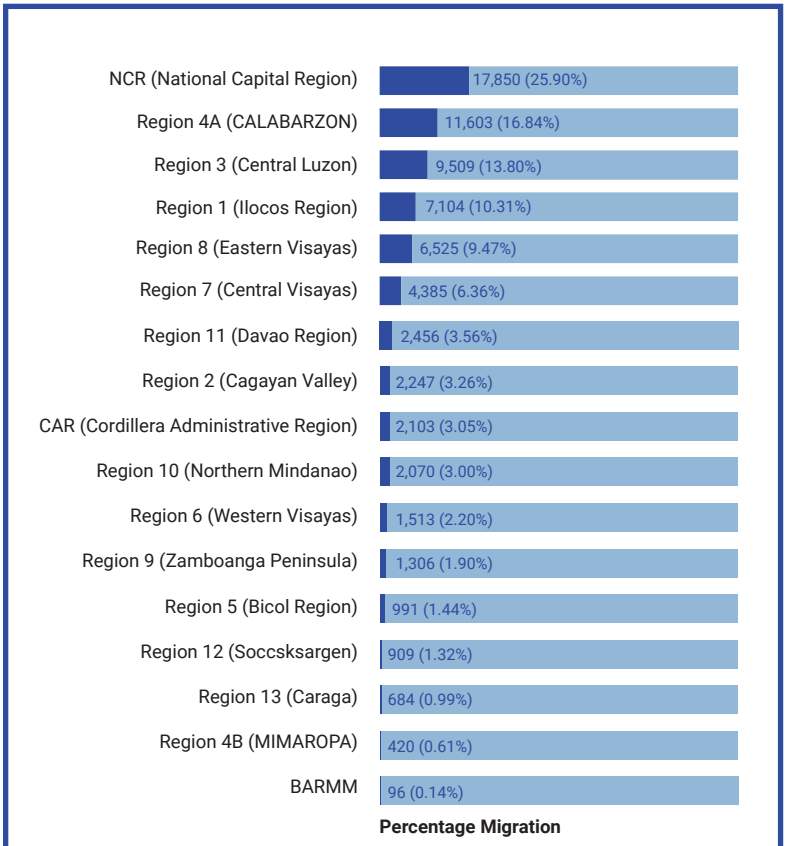
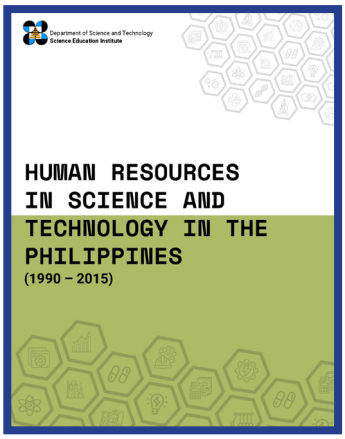


Figure 16. Distribution of S&T Filipino emigrants by region, 2014-2018 (Data Source: CFO)

A quarter (25.90%) of the total S&T Filipino emigrants came from the National Capital Region (NCR), the highest contributor among the 17 regions of the country from 2014-2018. It was followed by Region IVA (CALABARZON) and Region III (Central Luzon), with 16.84% and 13.80%, respectively *(Figure 16)*.

The DOST-SEI, being at the forefront in accelerating the production of S&T professionals in the country, has to consider and integrate the migration of S&T professionals in the Institute's S&T human resource development framework. This is to raise awareness among policymakers, key government agencies, as well as the academe and the industries, to develop strategies not only in ensuring deployment and utilization of Filipino professionals after graduation but more importantly, in sustaining a healthy working environment for the country's S&T workforce. The long history of high migration rate, particularly among the medical and health-related professionals, requires a comprehensive review of existing policies, and evaluation of degree program offerings to better cope with the needs of the present times. Moreover, much work must be done to fill the large gap between the supply and the projected demand of R&D personnel, as well as the regional targets in the ASEAN that the Philippines must meet. The increasing outflow of highly skilled, qualified, and educated workers can, hence, be a critical threat in meeting these goals, despite the perceived benefits and opportunities derived from it.



HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY IN THE PHILIPPINES (1990-2015)

The DOST-SEI had its second update of the continuous study on *"Human Resources in Science and Technology in the Philippines,"* driven by its vision to accelerate the country's human resource capacity in Science and Technology. While the first publication established estimates and furnished a picture of the stock of HRST in the Philippines from 1990 to 2010, this current publication provides a trend overview of the country's S&T workforce in 2015, as well as further classifications of HRST based on available related literature. One of the highlights of the publication is the discussion of the difference between the HRST Workforce, which is the set of workers in the field of Science and Technology, and the HRST Stock, which includes those with college

education in the field of Science and Technology. This study was conducted using the 1990, 2000, 2010, and 2015 census data collected by the Philippine Statistics Authority (PSA).

Here are some of the findings presented in the publication:

The total labor force of the country had been continuously increasing from 1990 to 2015, likewise, the S&T professionals. Results showed that there were 931,998 (1.76%) S&T workers in 2015, an increase of over 200,000 from 2010 *(Figure 17)*.

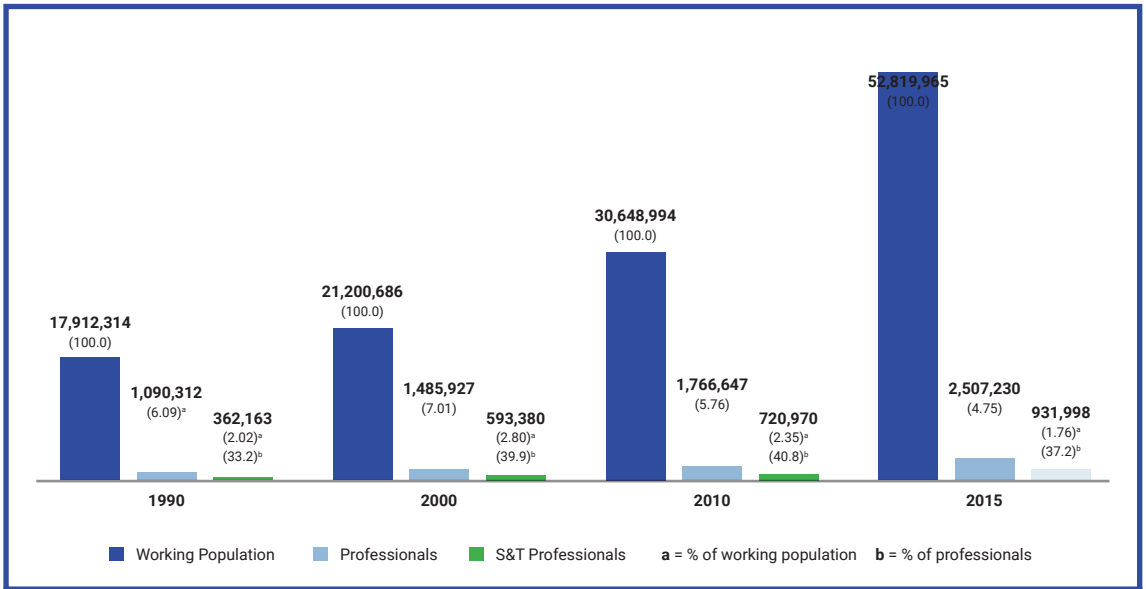


Figure 17: Distribution of the number of HRST professionals, All professionals, All Filipino workers

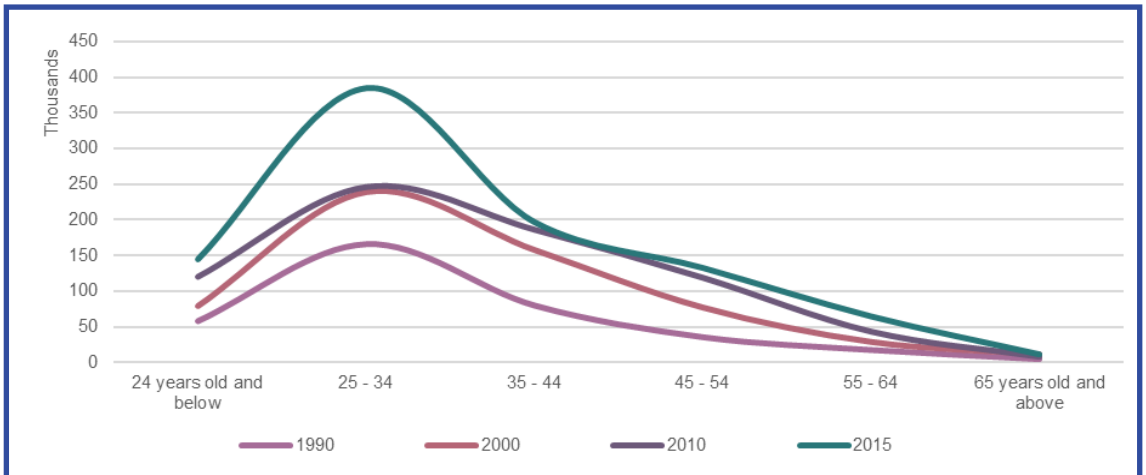


Figure 18. Distribution of S&T workforce by age group: 1990, 2000, 2010, and 2015

When it comes to the distribution of S&T Workforce by age group, results revealed that the greater part of the workforce remained to be within the younger age range (44 years old and below *(Figure 18)*, which was proven advantageous since those from the younger population tend to have a more competitive edge than those from the older population.

Meanwhile, figure 19 reveals that, among the 133 thousand household members with Postbaccalaureate degree, about 127 thousand (95.5%) had non-S&T related jobs, while only less than 5% were employed under S&T occupations. Notably, among the Technical-Vocational graduates, only less than 1% had S&T-related occupations.

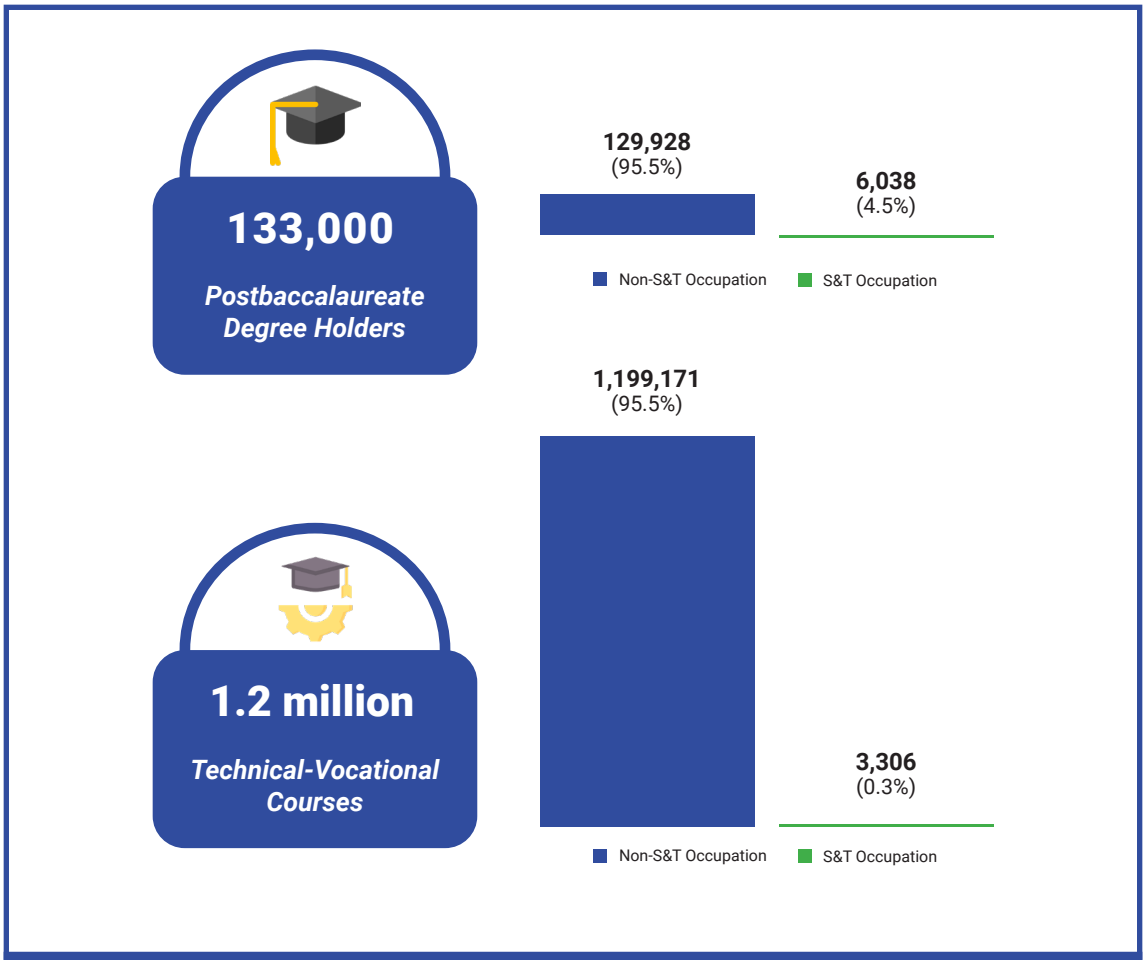


Figure 19: Number of postbaccalaureate degree holders and technical-vocational graduates by type of degree and occupation: 2015

High proportions of HRST personnel were found in Luzon and Visayas as shown in Figure 20. Remarkably, NCR, Region IV-A, and Region III accounted for the majority of the total number of S&T workers (58.7%), followed by Regions VI and VII with a total of about 115,000 HRST workers.

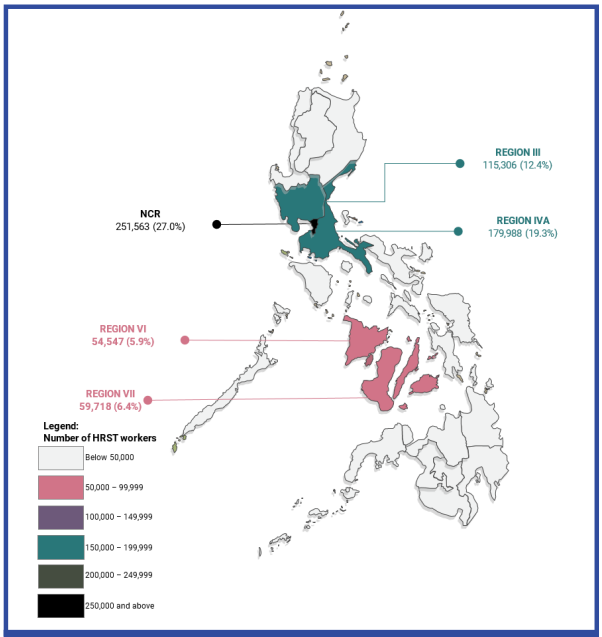


Figure 20: Top 5 regions with the highest number of S&T workers: 2015

When it comes to the distribution of HRST stock, relative to the working population and HRST workforce, results revealed that out of the over 50 million workers in the country, only 3 million belong to the HRST stock. This number is slightly over 6% of the total working population. Meanwhile, the HRST workforce comprised 1.7% of the total working population.

Figure 21 illustrates that a proportion of the HRST workforce is a subset of the HRST stock. Hence, deviation in the number of HRST stock and its proportion from the HRST workforce is a leakage in the transition of HRST inputs (i.e., those who graduated with S&T degrees) to HRST outputs (i.e., having an S&T occupation).

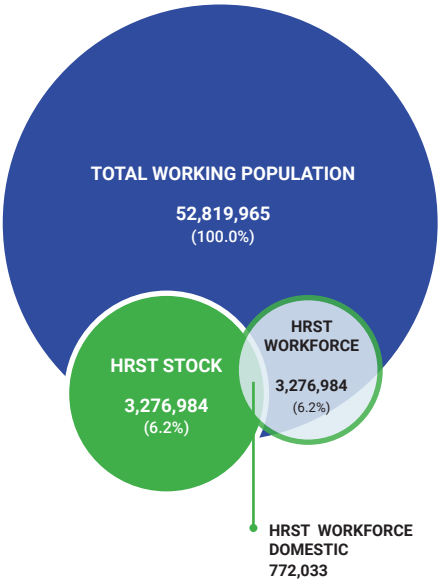
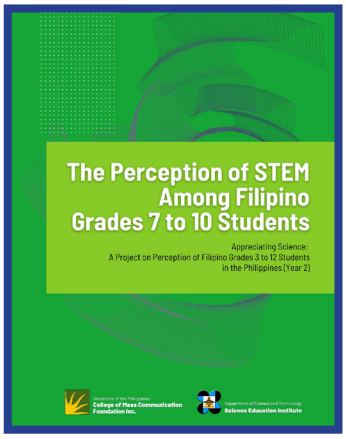


Figure 21: Distribution of the number of HRST workforce, HRST Stock, All Filipino workers

The aggregated results of this publication highlight more opportunities for developing and sustaining the S&T supply of the country, towards creating knowledge-based policies that incorporate the contribution and importance of Science and Technology in fostering nation building.

Internally, this publication could aid the DOST - Science Education Institute in implementing their projects and initiatives by supplementing rationalization on which fields or areas need priority.

Given that the institute's primary mandate is to accelerate the S&T workforce of the country by: a) administering scholarships, awards, and grants, that undertake Science and Technology manpower development; and b) formulating plans and establishing programs and projects that seek the promotion and development of Science and Technology education, it is only necessary for SEI's policies to be modeled according to the current state of the country's S&T human resources in order to address their specific needs.



THE PERCEPTION OF STEM AMONG FILIPINO GRADES 7 TO 10 STUDENTS

A three-phased project entitled *"Appreciating Science: A Project on Perception of Filipino Grades 3 to 12 Students in the Philippines,"* which was conducted by the University of the Philippines Diliman, College of Mass Communications Foundation Inc. (UPCMCFI) and the Department of Science and Technology – Science Education Institute (DOST-SEI), examined the growing concern on the Filipino students' poor academic performance in Science. The project aimed to explore how Science was perceived by students in Grades 3 to 12.

The latest publication in 2022, *"The Perception of STEM among Filipino Grades 7 to 10 Students,"* which covered the second phase of the study, generally sought to answer how and in what contexts the grades 7 to 10 students would pursue the Science, Technology, Engineering, and Mathematics (STEM) track as their field of studies.

The survey areas included selected cities in the National Capital Region, as well as in Regions I, III, V, VI, VII, VIII, IX, XI, and XII. Two schools—one public high school and one private high school—were taken from each region. Both quantitative and qualitative data were obtained through surveys, Key Informant Interviews (KIIs), and Focus Group Discussions (FGDs).

Survey results showed that the preference in Science was consistent across gender, type of school, and region. Overall, 22.2% of the students claimed that Science was their favorite subject—followed by English (21.4%) and Mathematics (17.6%).

The FGDs also revealed a high interest in Science among the students, as most informants expressed that Science is their favorite subject. It was found that the Science topics were explained properly to them, and their teachers' teaching approaches aroused their curiosity for the subject. When it came to the most interesting domains of Science, there was a general agreement that *"Earth and Space"* and *"Living Things and their Environment"* were the easiest to understand among all the domains.

Based on the KIIs, the students were particularly interested in Biology, Chemistry, and Physics. Students from the NCR, however, preferred Mathematics and MAPEH more than the other domains.

Results revealed the following factors that could entice students to choose STEM as an academic track:

a. engagement in Science activities,
b. completing Science laboratory experiments,
c. having financial assistance and moral support of parents and guardians
d. support and encouragement from friends and classmates.

It cannot be denied that teachers play an important role in encouraging students to like and take up STEM as an academic track. As students revealed in the survey and FGDs, they were fond of teachers who are knowledgeable about the subject and are able to explain the lessons well. They also preferred teachers who are creative and approachable and who use visual aids and social media to enhance their teaching.

Out of 1,067 students, 66.1% said that they wanted to continue pursuing the academic track in senior high school. Of these, close to two-thirds or 63% would pursue STEM. However, there were still students, however, who did not want to pursue STEM based on the following reasons:

a. the STEM subjects are difficult or complicated;
b. STEM is not related to the career they want to take; and
c. they are not good in Mathematics and computations.

Nonetheless, there were students who were still open to the possibility of changing their decision and taking up STEM, provided that:

a. there will be a change in the course they want to take in college;
b. if it is STEM-related, there is a scholarship, incentive, or financial assistance offering; and
c. their family/parents/guardians would advise them to take STEM.

The top three courses the students wanted to take in college were medicine, engineering, and education/ teaching. Most of the students expressed that the current COVID-19 situation has affected their studies and interest in Science, with many of them saying that the remote and online learning set-up made the modules more engaging.

Results also indicated that there is a significant association between the students' intention to enroll in STEM and their favorite science subject in NCR,wherein more students who like Force, Motion, and Energy would intend to take up STEM. Furthermore, conducive learning environment and parents' financial and moral support significantly increased the odds of a student wanting to take up STEM.

Living in Regions VI and XII have significantly higher odds of STEM intention compared to living in NCR. Living in Regions III, V, and VIII have significantly lower the odds of STEM intention compared to living in NCR.

DOST ENDORSES APPLICANTS FOR S&T ELIGIBILITY SPECIALISTS

The Science Education Institute, as the implementing agency of the Presidential Decree (PD) No.997, continues to accept, evaluate and process applications coming from the various parts of the country. Out of 92 applications received, 54 were approved and endorsed by the DOST Secretary to the Civil Service Eligibility (CSC) Central Office and various concerned CSC Regional Offices for the grant of S&T Eligibility Specialist under PD No. 997.

The PD No. 997 is a law conferring civil service eligibilities on scientific and technological specialists on the bases of their qualifications and the requirements of public service. It is designed to

encourage more S&T professionals to get into public service and contribute to research and innovation in the country.

The applicants were evaluated by the Technical Working Group and the Presidential Committee on the bases of their qualifications and the requirements of public service, as provided by the Law. The figure below shows the number of qualified applicants according to the bases of their qualification by sex.

Table 31: Number of Qualified Applicants by S&T Fields: PD No. 997, 2022

Bases for Qualification	Sex		Total
	Female	Male	
Master's Degree			
MS Biology	3		3
MS Astronomy		1	1
MS Fisheries	1		1
MS Physics	1		1
MS Applied Physics	1		1
MS Meteorology	1	1	2
MS Environmental Science	2	2	4
MS Information Technology	15	7	22
MS Engineering	1	2	3
MS Industrial Engineering	2		2
MS Materials Science and Engineering	2		2
MS Biological Engineering		1	1
MS Computer Engineering	1		1
Teaching Experience	2	2	4
Research Experience	2	1	6
	37	**17**	**54**

SECTION

02

INNOVATION UNLEASHED: TRANSFORMING STEM EDUCATION

DEVELOPMENT OF CHILDREN'S STORYBOOKS IN SCIENCE AND MATHEMATICS

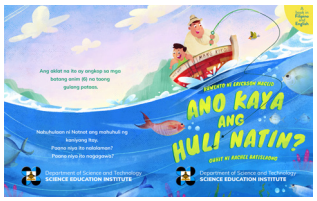
To encourage more teachers to use storybooks to enhance the development of their pupils and, at the same time, boost their interests in science and mathematics, the Department of Science and Technology, through the Science Education Institute, initiated the development of storybooks intended for children aged six (6) to eight (8) years old. For 2022, the following fifteen (15) storybooks were produced:

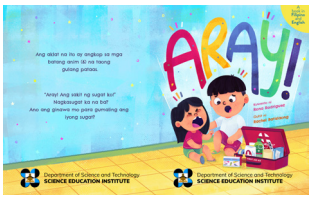
1. Maligayang Pasko
2. Hati Tayo!
3. Chichay, Ito ba ay May Buhay?
4. Ang Kanin ni Kaka
5. Ano Kaya ang Huli Natin?`
6. Ika-20 ng Hunyo
7. Pula at Lapu
8. Bella, Bilis!
9. Espesyal na Kandila
10. Magkaibang Oras
11. Huli Ka!
12. Ang Pinaka Munting Abala
13. Aray!
14. Disyembre Na!
15. Ang Magkaibigang Sina Klaro at Bughaw

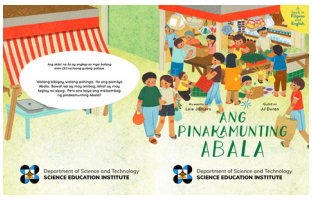
The storybooks were written by child development experts from UP College of Home Economics, illustrated by freelance artists, and proofread by an expert from UP College of Arts and Letters. The books contain the following elements: Back and Front Covers; Inside Front Cover and Title Page; Illustrated Scenes with Texts of Story written in Filipino and in English; Suggested Post-Reading Activity; Storytelling Guide and Unlocking of Words; and Publishing Page and Project Management Staff.

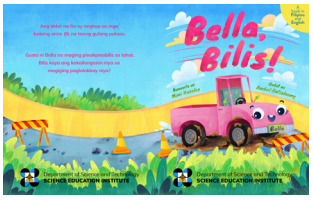
The efforts to develop more storybooks are based on the recommendation of an evaluation study, suggesting the production of more local and developmentally appropriate storybooks in Science and Mathematics for early childhood and early grades development. This initiative was backed-up by various studies that showed the importance of storybook reading for the development of early language and literacy in early childhood and for the development of several skills that are important to the child's development.

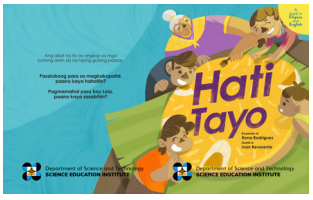
The following are some of the pictures of covers of the 2022 storybooks:

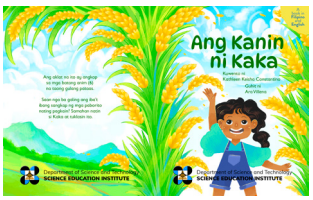


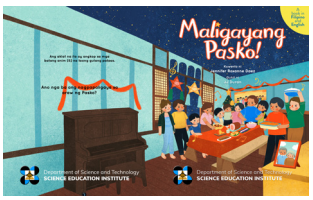


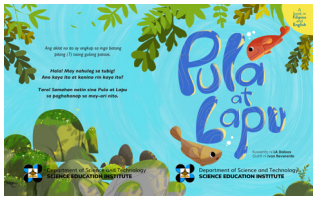












Winners in Elementary Level, Teaching and Learning Category were flanked by the SEI officials. L-R: SEID-OIC Cynthia Gayya, SEI Director Dr. Josette T. Biyo, Jennifer Gonzales, King George Barruga, Jobert Salingay and SEI Deputy Director Engr. Albert G. Marino.

SEI AWARDS INNOVATIONS IN SCIENCE AND MATHEMATICS TEACHING IN THE THIRD INNOBOX SEARCH

On its third year, InnoBox, the Search for the Most Innovative Teaching and Learning Resources in Science and Mathematics with this year's theme *"STEM Resources for Remote Learning"* awarded the most innovative project and implementer for the two levels, elementary and secondary and for categories teaching and learning and digital tool held at the Philippine International Convention Center (PICC) on October 26, 2022. The search yielded 106 entries, from ninety (90) high schools and sixteen (16) elementary schools where five (5) finalists where chosen from elementary and six (6) from high school.

For Elementary Level Teaching and Learning category, King George Barruga of Jose Zurbito Sr. Elementary School -Masbate bagged the grand prize for the project *"Multisensory Box: VARK Model."* Jeniffer A. Gonzales of Nagyantok Elementary School – Zambales was placed 2nd for *"WILSWAP: I-LIKE (Innovative Learning Intervention Kit for Enhancement)"*, and Jobert M. Salingay of Magting Elementary School-Camiguin 3rd for *"A Proposed Development of Digital Learning Resource Material for Selected Grade 2 Mathematics and Grades 5 and 6 Science Essential Topics for Camiguin Island Learners"* project.

Meanwhile, for the High School Level, *"STEM Pocket Home Lab: Learning Kit for SHS STEM"* by Agustin Owen Peña of San Pedro Relocation Center National High School -Laguna took home the grand prize followed by Kevin Daga-As of the Philippine Science High School SOCCSKSARGEN Campus – South Cotabato on 2nd place for *"eKahon: A Portable Active Device for Science and Math Experiments"* and Jessie Nava of Sindagan National Agricultural School – Dipolog City for *"Project EINSTEIN: A Solar Powered Sci Math Calculator with SMS Notification System using Aduino Uno"* in third place.

Two special awards were given for the Digital Tool Category Elementary Level where projects *"i-Module: Your Self-Paced, Self-Learning Interactive Module"* by Lawrence Patrick Limen Baraoidan Elementary School-Cagayan and *"AlaMath Application: Ang Batang May Alam sa Math"* by Jennifer Abille of Columban College- Baretto in Olongapo City are recognized.

Winners in High School Level, Teaching and Learning Category were joined by the SEI officials. L-R: SEID-OIC Cynthia Gayya, SEI Director Dr. Josette T. Biyo, Jessie Nava, Agustin Owen Pena, Kevin Daga-as and SEI Deputy Director Engr. Albert G. Marino.

Special awardee for Digital Tool Category Elementary Level Jeniffer Abille with the SEI officials. L-R: SEID-OIC Cynthia Gayya, SEI Director Dr. Josette T. Biyo, and SEI Deputy Director Engr. Albert G. Marino.

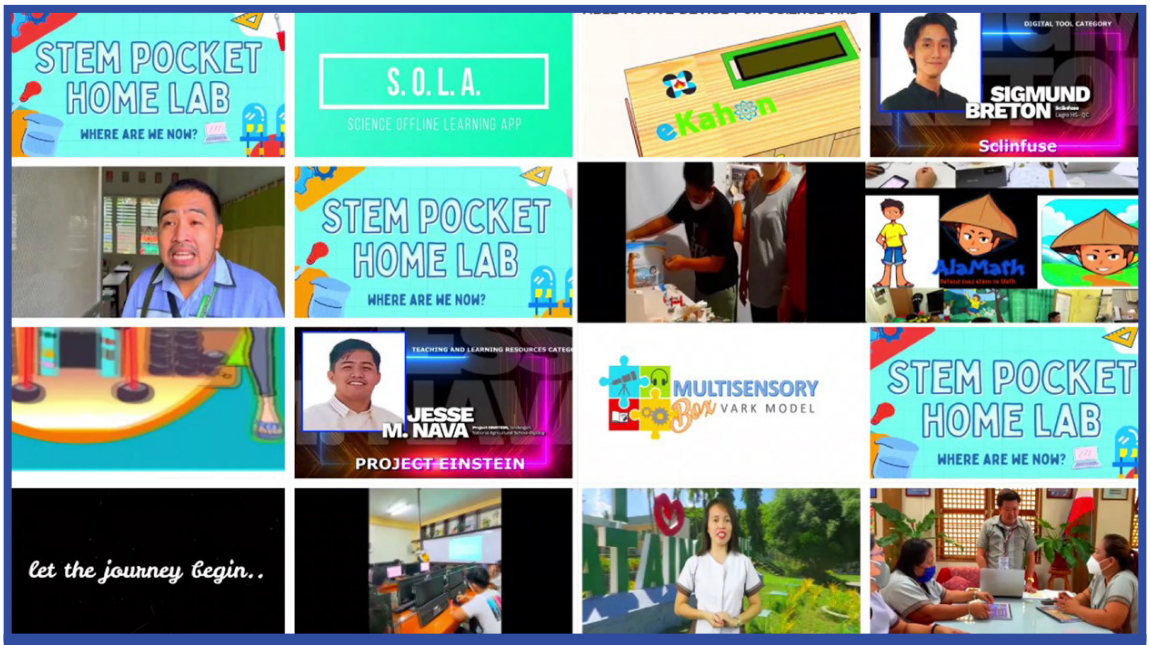
Digital Tool Category for High School top prize was awarded to *"SCinFUSE: Science Fun Unified Session in E-learning"* by Sigmund Breton of Lagro High School Quezon City followed by *"Science Offline Learning App (SOLA)"* of Marjorie Nariz Las Piñas City National Science High School for the 2nd prize and *"Project DIREcT (Digital Intervention Remote Electronic Teaching): A Teaching Learning Resources for Science and Mathematics)"* by Madilyn Povadora of Cataingan National High School - Masbate in third place.

In her message, SEI Director Dr. Josette T. Biyo, encouraged the finalists to embrace their new role as innovators, and even as education entrepreneurs or *"edupreneurs."* She also assured that, *"SEI will bring these resources to schools that need them most and create more avenues to develop the ingenuity of Filipino science and math teachers."*

DOST Secretary Renato U. Solidum, in his video message, said that he is optimistic that the tools and resources submitted for this year's competition will emphasize the teachers' creativity and ingenuity in responding to educational challenges in the new normal. He added, *"And I hope participants will continue this path to innovation, as science, technology, and innovation are key to economic growth."*

The Search Criteria included: 40% Innovativeness/ Originality; 30% Quality of the teaching and learning resource; 20% Value to teaching and learning; and 10% Alignment with the Curriculum. Cash prizes and trophies were awarded, where the grand winner for each category and grade level received P100,000; P60,000.00 for 2nd place; P40,000 for 3rd place; and P20,000 each for special awardees.

Winners in High School Level, Digital Category with the SEI officials L-R: SEID-OIC Cynthia Gayya, SEI Director Dr. Josette T. Biyo, Madily Povadora, Sigmund Breton, Marjorie Nariz and SEI Deputy Director Engr. Albert G. Marino.



Screenshot features of some of the entries for 3rd Innobox

VIDEO STORYTELLING

The Department of Science and Technology (DOST), through the Science Education Institute (SEI), has been continuously developing innovative educational resources that will uplift school instruction and deliver basic education more effectively. One of these is the development of children's storybooks in science and mathematics.

From 2018 to 2019 and 2021 to 2022, the DOST-SEI was able to produce a total of forty-eight (48) storybooks. These storybooks were printed and disseminated to selected schools nationwide. However, to disseminate more copies of the storybooks to their intended users, there is a need to print more copies. Considering the time and resources needed to do it, the DOST-SEI initiated the implementation of the project *"Video Storytelling."* Video Storytelling involves conversion of all the storybooks developed into a video format.
A total of ten (10) storytelling videos were developed in 2022, in addition to the eight (8) previously made in 2021. These videos were created using 2D animations based on the available artworks or PSD/layered and Jpeg files submitted by the artists, voice-over, sub-title, and background music. The titles of the storytelling videos developed in 2022 are the following:

1. Ang Panukat ni Kat;
2. Bulaga!;
3. Halakhak;
4. Hmm, Anong Oras na Kaya?;
5. Inspektor Pekto;
6. Kaninong Anino?;
7. Panahon Na!;
8. Paulit-ulit;
9. Si Kuya at Ako; and
10. Yakap na Mahigpit.

To reach more beneficiaries, these videos have been uploaded to social media sites (e.g. DOST-SEI STEM Innovations Facebook page, etc.) and the DOST-SEI Innovations Portal. These videos and other STEM resources can be downloaded by the interested parties free of charge.

SMART: DEVELOPMENT OF GRADES 11-12 LESSONS IN SCIENCE AND MATHEMATICS

In 2006, the Department of Science and Technology (DOST), through the Science Education Institute (SEI), started the development and production of locally-produced interactive courseware materials. The said materials were developed in collaboration with partner institutions, such as the University of the Philippines National Institute for Science and Mathematics Education Development (UP NISMED), Department of Education (DepEd), Philippine Normal University (PNU), and the DOST-Advanced Science and Technology Institute (DOST-ASTI). Among the courseware modules that were developed are the following:

1. Modules in Science and Mathematics for Elementary Schools (1st Release, 2006) – 102 Modules
2. Grades 1-6 Mathematics K12 (Second Release, 2014) – 60 Modules
3. Grade 7 Science and Mathematics (Third Release, 2014) -133 Modules
4. Grade 8 Science and Mathematics (Third Release, 2014) – 118 Modules
5. Grades 9-10 Science and Mathematics (Fourth Release) – 42 Modules

The success in the implementation and the impacts of these courseware to students' learning, measured through various pilot-testing methods and the evaluation study of the currently available DOST courseware materials, inspired the development in 2021 of the Grades 3-6 lessons/contents in science. A total of 60 modules in Science for Grades 3 to 6 and accompanying teaching guides were developed. These modules are currently being digitized and reviewed and some are for pilot-testing by 2023.

To complete the whole set of all grade levels of courseware, the DOST-SEI outsourced in 2022 to UP NISMED, the development of contents or lessons for the Grades 11-12 Science and Mathematics Courseware. The lesson development will be completed by March 2024 and digitization will commence in the 2nd quarter of 2023.

PROMOTION OF STEM RESOURCES (POSTER)

DOST-SEI features STEM educational resources during the 2022 National Science and Technology Week

To promote the various innovative educational resources developed by the Science Education Institute of the Department of Science and Technology (DOST-SEI), the project *"Promotion STEM Resources (POSTER)"* was initiated.

For 2022, the project was able to facilitate the development of three (3) Audio Visual Presentations (AVP) of all the innovative Science education resources developed by SEI, through the Innovating Unit of SEID.

The 2022 DOST Science and Technology Week, held on November 23-27 at the World Trade Center in Pasay City, showcased some of the latest innovative products and services developed by Filipino scientists, researchers, and engineers. Among the innovations featured in the 5-day activity are the DOST-SEI-developed STEM educational resources such as the DOST Courseware, SIMATAR, and Storybooks.

The in-person exhibition was an opportunity to distribute 199 copies of DOST-SEI Storybooks and at least 22 Grades 1-6 Mathematics and 47 Grades 7-8 Science and Mathematics Courseware CD packages. SIMATAR was also demonstrated where at least thirty (35) print package copies were distributed.

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Table 32: STEM Educational Resources Disseminated

Teaching and Learning Resource	No. of copies/ packages installs 2022
DOST-SEI Storybooks	199
DOST Courseware	69
Strategic Intervention Material for Teaching with Augmented Reality (SIMaTAR)	35

A student from Tanauan North Central School tries out one of the lessons in the DOST Courseware application.

Young learners with their parents availed of their chosen Storybooks in science and mathematics, given for free during the exhibitions.

During the exhibit, students explored the DOST-SEI 21st Century Classroom and International Space Station through Virtual Reality (VR). Such technology is the platform integrated to the application currently being developed by DOST-SEI, "Virtual Laboratory Application in Science (VLAS)".

ACCESS TO RESOURCES AND INNOVATIONS IN SCIENCE EDUCATION (ARISE)

21st CLEM school-adopters in DepEd Division of Lipa City Inosloban-Marawoy INHS (left) and San Celestino INHS (right) doing the video recording sessions and modules production during the pandemic.

Adapting to the post-pandemic educational landscape, Access to Resources and Innovations in Science Education (ARISE) project, as an ecosystem for 21st century teaching and learning, aims to support the DepED KITE program in the development of science and mathematics education in the country through: 1) learning environment and spaces design, adoption and management; 2) knowledge management, information and resources sharing; and 3) monitoring, research and evaluation.

ARISE model classroom dubbed as *"21st Century Learning Environment Model (21stCLEM)"*, in this new and emerging mode of teaching and learning which includes: modern learning spaces, meta verse, augmented reality and Internet of Things (IOT), is a flexible learning facility designed to promote productive learning experiences, while best practices in inclusive education are observed. Conduct of webinars and seminars in education, information and communication technologies equip teachers with new and emerging technologies and 21st century teaching and learning alongside STEM trainings for capacity building.

To assist in the blended teaching and learning, the development of teaching and learning resource content and learning management systems, the ARISE portal, likewise will serve as repository of SEI-produced innovations and resources accessible through various platforms which will eventually cater to the knowledge management, information, and resources sharing strategy of the project.

A. 21st Century Learning Environment Model (21st CLEM)

1. *21st Century Classroom School-Adopters Adapts to Pandemic*

With the 21st CLEM equipped with education, information and communications technologies, for the last two school years during the pandemic, served as multimedia center where teachers of school-adopters conducted audio, video and modules production to ensure continuity of education through distance teaching and learning and later transitioning to blended mode of instruction.

A virtual audit by SEI was also conducted with the school-adopters to monitor the functionality, adaptability, and sustainability of the facility during the new normal learning environment for school-adopters from Muntinlupa City, Los Baños-Laguna, Balanga-Bataan, Burgos-Ilocos Norte, and Lipa City-Batangas. Technical assistance was likewise extended to potential school-adopters from Kidapawan City, Bayambang-Pangasinan, Kalibo-Aklan Malabon City, and Bataan.

Virtual audit conducted with teaching staff from Los Baños Senior HS – Laguna and DOST4A on 31 March (left) and Balanga City Science HIS with DOST-PSTO Balanga and LGU Balanga on 1 April (right)

Teachers of Bacarra Central ES demonstrates robotics (left) while students showed how Virtual Reality works (right) to Bacarra Mayor Fritzie DC. Gapasin and DepEd Ilocos Norte SDS Joann A. Corpuz

2. *More Schools Launches 21st Century Classrooms*

Adapting to the new normal of teaching and learning, four more school-adopters launched their own 21st Century Classroom Model adhering to SEI's design during the gradual transition to post-pandemic era.

Adding to the new roster of school-adopters of the project in the northern part of the country is Bacarra Central Elementary School in Ilocos Norte, which it inaugurated in April 2022 with SEI-SEID staff, DepEd Division of Ilocos Norte, Bacarra District I teachers, and Bacarra Local Government Unit (LGU) as represented by its Mayor Fritzie Dela Cruz Gapasin.

Meanwhile, in Southern Luzon, three more school-adopters were included to the growing list, this time in the hometown of our national hero, Dr. Jose P. Rizal in Calamba City, Laguna. These schools are: 1) Calamba City Science Integrated School, 2) Camp Vicente Lim Integrated School and 3) Looc Integrated School.

The inauguration was spearheaded by the Calamba City LGU Vice Mayor Angeito Lazaro, Jr. and witnessed by the members of the schools' Parent Teacher Associations (PTA), teachers, and students. Each school demonstrated the features of their 21st Century Learning Environment Model (21st CLEM) as to Robotics, 3D printing, interactive projector, and virtual reality, among other technologies.

A student from Camp Vicente Lim Integrated School demonstrated 3D Printing Technology.

Students from 21st CLEM school-adopters in Calamba City, Laguna demonstrated the interactive projector-smartboard (lower left), robotics and sensor (top photo) to guest teachers and parents while Virtual Reality (VR) was tried by Calamba City Vice Mayor Angelito Lazaro, Jr. (lower right)

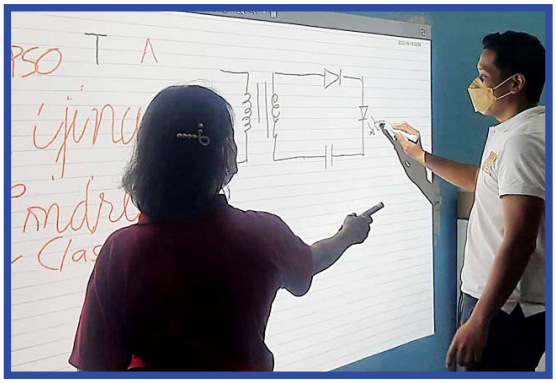
To date, twelve (12) school-adopters of 21st CLEM can be visited for benchmarking where five are located in Lipa City in Batangas, three in Calamba City and one in Los Baños for Laguna, two in Burgos and one in Bacarra both in Ilocos Norte. Thirteen more schools are set to launch their 21st CLEM in the coming school years.

3. 21st CLEM School-Adopter Trainings

Prior to the launching the 21st CLEM, school-adopters underwent trainings as part of the capacity-building program. The modules are on various education technologies such as: Robotics, 3D printing and modelling, use of the interactive projector, visualizer, drones, virtual and augmented reality tools, and DOST Courseware.

Students and teachers during the two-day training on "Robotics: Learning to Code and Improving Competitiveness" in Calamba City, June 8-9, 2022 with DepEd Division of Calamba Supervisors, DSTC and DOST-SEI.

Engr. JJ Viernes of 3D printing partner Omnifab Inc.demonstrates to students and teachers of the three school-adopters how to install the filament in the 3D printer during the one-day training on "3D Modelling and Printing Using XYZ" in Calamba City, June 10, 2022 with DepEd Division of Calamba and DOST-SEI.



Teachers of Cupang Senior HS, Muntinlupa City tries the interactive projector board, virtual reality boxes and augmented reality cards during the seminar conducted by 21st CLEM project leader, Ms. Josephine Feliciano of DOST-SEI in August 18, 2022.

These trainings were conducted in cooperation with project partners namely, Data Science and Technologies Corp. (DSTC) for Robotics; Omnifab, Inc. for 3D Printing and Modelling; and Epson Philippines for interactive projectors and visualizer. The trainings on virtual Reality, augmented reality, and DOST Courseware modules, on the other hand, were conducted by SEI.

4. 21ST CLEM Webinars

Meanwhile, Ms. Josephine S. Feliciano discussed the features and other information on 21st CLEM in the Department of Education (DepEd) Region 6, Western Visayas Special Science Program Summit held on July 6, 2022 via Zoom with 215 teacher-participants from all over the region.

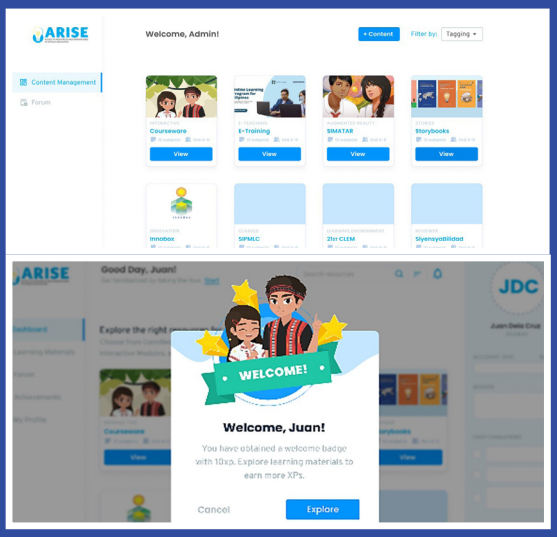
B. ARISE PORTAL

To ensure access to new and emerging integrative educational and instructional technologies as tools to improve pedagogy and make teaching and learning more relevant, a centralized repository of

knowledge and open educational innovations and resources, the one-stop-shop ARISE portal was designed as a content and learning management system.

It will allow free access to SEI-produced digital teaching and learning resources (TLRs) in science and mathematics in the form of multimedia interactive software, videos and other technology-driven knowledge products developed in multi-platforms for desktop and mobile devices,

Likewise, this will serve as a virtual venue for professionals and stakeholders to share information, perspectives, ideas, experience and information to ensure it will allow free access to SEI-produced digital teaching and learning resources (TLRs) in science and mathematics in the form of multimedia interactive software, videos, and other technology-driven knowledge products developed in multi-platforms for desktop and mobile devices.



Screenshots of the Content Management and User Interfaces of the ARISE Portal

SCIENCE AND MATHEMATICS APPLICATION AND RELATED TECHNOLOGIES (SMART)

In full swing in 2022 is the massive production of Teaching and Learning Resources (TLRs) for science and mathematics in multi-platforms to cater to the demand for online contents and resources during the post-pandemic era, when students come back to regular classrooms for face-to-face classes. These resources come with emerging technology platform in 2D multimedia, augmented reality, and 360 degree environment to introduce a more interactive and immersive experience for the learners.

I. DOST COURSEWARE

A. Modules Digitization

To complete the modules for each grade level, the DOST Courseware in science and mathematics production of Grades 3-6 Lessons in Science was initiated with thirty (30) lessons for the first batch of development which cover topics on the following:

a. Earth And Space
b. Living Things and Their Environment
c. Matter
d. Force, Motion, And Energy

Screenshots of Courseware Grades 3-6 Science User Interface Menu

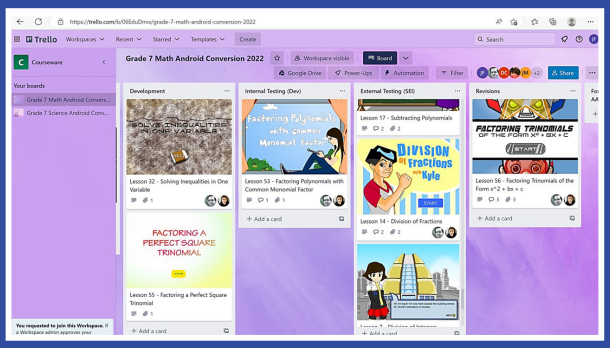
Likewise, the digitization and review of forty-two (42) modules in Grades 9-10 culminated for pilot-testing for actual classroom use, while forty (40) script lesson contents for Grades 11-12 Senior High School will be digitized in the coming year.

Sample slides from the Courseware Grades 9-10 science and mathematics

The Coursewares will be available in MS Windows, Android, Apple IOS & WebGL (web-based) platforms.

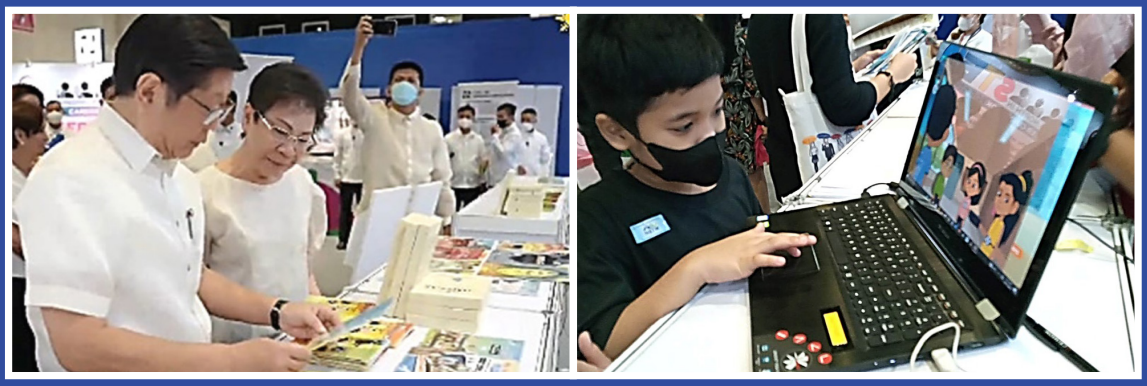
Moreover, eighty (80) Android version of Courseware Grades 7-8 science and mathematics were transformed from MS Windows platform adding up to the existing 152 modules available in Google Play Store.

B. *Distribution, Installs and Access*



Monitoring Dashboard of modules converted from MS Windows version to Android

After two years, the in-person exhibition of the DOST National Science and Technology Week (NSTW) served as an opportunity to distribute at least 22 Grades 1-6 Mathematics and 47 Grades 7-8 Science and Mathematics Courseware CD packages. During the rounds of the exhibits, President Ferdinand E. Marcos, Jr. and SEI Director Dr. Josette T. Biyo demonstrated the Courseware features and their applicability to the curriculum. Teachers and learners also had a chance to preview the modules in MS Windows version through the exhibitions from 23-27 November 2022.



Left: Pres. Ferdinand E. Marcos, Jr. looks at the DOST Courseware packages while Dr. Josette T. Biyo briefs him on its features; Right: A pupil tries a lesson in Mathematics

To disseminate to more schools, the (9) private Catholic schools in Kalibo, with ninety (90) science and mathematics teachers, were given the Courseware CD packages, as well as an orientation on Grades 7-8 science and mathematics during a training-workshop for language strategies in Aklan in September 2022.

Meanwhile, the number of downloads and installs from various access points for all platforms has steadily increased with 12,269 installs from Google Play Store for a total of 111,897, since the modules were first uploaded in 2016. Meanwhile, in Apple Store, this year recorded a sharp increase with 4,142 installs for a total of 6,961 since 2018.

Table 33: Number of Installs by Grade Level & Subject from Google Play Store

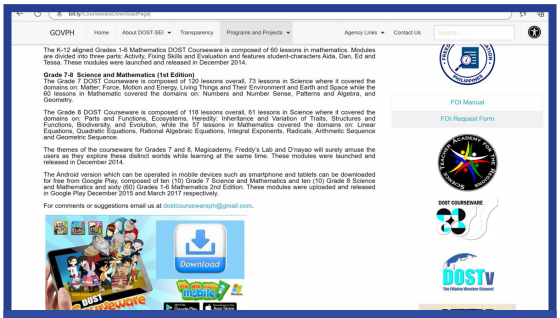
Grade/Subject	No. of Installs 2022	Total No. of Installs (Since 2016)
Grades 1-6 Mathematics	2,670	50,563
Grades 3-6 Science	1,892	5,487
Grade 7 Science	2,160	13,438
Grade 7 Mathematics	1,933	14,065
Grade 8 Science	1,953	12,887
Grade 8 Mathematics	1,681	15,547
TOTAL	**12,269**	**111,897**

Table 34: Number of Installs by Grade Level & Subject from Apple Store

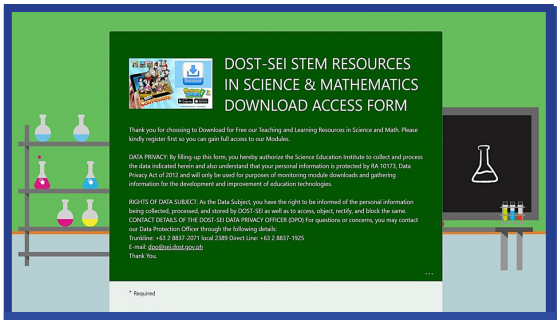
Grade/Subject	No. of Installs 2022	Total No. of Installs (Since 2016)
Grades 7 Science	3,064	3,720
Grades 7 Mathematics	70	517
Grade 8 Science	796	1,937
Grade 8 Mathematics	212	787
TOTAL	**4,142**	**6,961**

Moreover, the number of hits in the Courseware one-stop-shop download link at SEI website likewise recorded significant hits or link visits at 19,662 totaling to 120,224 since its activation in September 2018. The shortcut link http://bit.ly/CoursewareDownloadPage from the SEI website will lead to the download page below http://www.sei.dost.gov.ph/index.php/programs-and-projects/innovations/83-courseware where all the Courseware platforms in MS Windows (413 modules), Android (152 apps), and Apple IOS (20 apps) can be downloaded for free. The mobile application versions are available on Google Play or Apple Store.

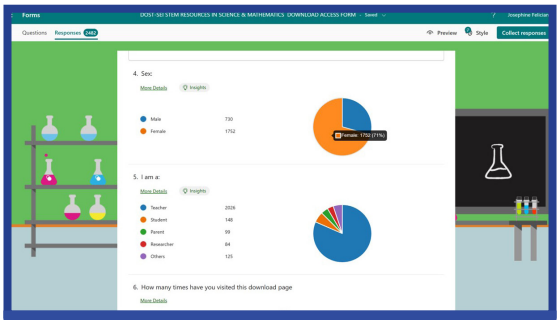
At least 464 users registered on the download access page totaling to 2,368 as of 2022. This access form will lead to the One Drive link where Courseware modules in all platforms are uploaded along with other STEM resources produced by SEI.



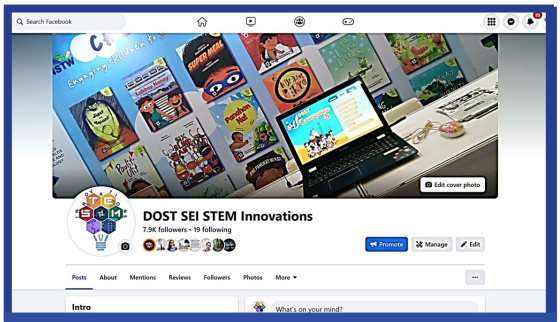
Download page link of the DOST Courseware at the SEI Website



Download Access Registration Form



Courseware Download Data Dashboard



Download page. The New Facebook Like Page from the DOST Courseware to DOST SEI STEM Innovations e-link of the DOST Courseware at the SEI Website

The top five regions where the bulk of registered users come from Regions IVA (Calabarzon), 1 (Ilocos Region), National Capital Region (NCR), X (Northern Mindanao), and VII (Central Visayas). Around 71% are females and twenty-seven 29% are males. Teachers account for the 82% of most downloaders followed by students and then parents.

Likewise, the former DOST Courseware social media Facebook like page breached the 7,000 mark with its new handle at the DOST SEI STEM Innovations, where all the SEI-produced innovative education technologies will be featured apart from the DOST Courseware. For more information, follow the FB page or email ***dostcoursewareph@gmail.com*** and ***dostsei. steminnovations@gmail.com.***

II. STRATEGIC INTERVENTION MATERIALS FOR TEACHING AUGMENTED REALITY (SIMATAR)

Teaching now comes with new excitement with the introduction of augmented reality (AR) technology in the classrooms through a level-up Strategic Intervention Material (SIM). SIMATAR is a collection of SIMs transformed into comics illustrations with the virtual simulations of select drawings to enrich experience and assist in learning concepts through printed resources with the AR technology. The following modules are now available for free at Google Play and Apple Stores:

1. Earthquakes and Faults
2. Journey Into the Cell
3. Comets, Meteors and Asteroids
4. A Storm is Born
5. Whats' the Matter

SIMATAR was also demonstrated during the in-person DOST-National Science and Technology Week (NSTW) exhibitions In November 2022 where at least thirty (35) print package copies distributed.

Teachers and student alike amused themselves with the augmented reality technology feature of SIMATAR Storm and Cell modules.

III. VIRTUAL LABORATORY APPLICATIONS IN SCIENCE (VLAS)

For 2022, six (6) more modules were added to the previously developed seven (7) modules, to complete the package of thirteen (13) modules of VLAS in three-dimension (3D) and 360 degree setup. VLAS is a virtual simulation where a parallel learning environment allows students to have an immersive experience of online laboratory experiments without going into a physical laboratory.

It covers the following thirteen (13) topics in Biology, such as:

1. Introduction to Laboratory
2. Laboratory Biosafety
3. Use of Compound Microscope
4. Levels of Biological Organization
5. Comparing Plant and Animal Cells
6. Bacteria, Fungi and Protists
7. Sexual and Asexual Reproduction
8. Cell Cycle and Cell Division–Mitosis and Meiosis
9. Mendelian Genetics
10. Linkage
11. Nucleic Acids DNA and RNA
12. Central Dogma of Molecular Biology
13. Mutations

The 13 modules will be available for free in 2023 in MS Windows, Apple OS and WebGL platforms.

The 3D 360 degree environment features of the VLAS application

2022 CLIMATE SCIENCE YOUTH CAMP

The campers, together with UP MSI marine scientists, DOST SEI facilitators, and representatives from DepEd Camiguin and provincial government of Camiguin, pose for a group photo during the 2022 CSYC closing program.

The fight towards a greener and healthier environment has continued.

After going virtual in 2021, the Department of Science and Technology–Science Education Institute's (DOST-SEI) in-person Climate Science Youth Camp (CSYC) made its comeback in the province of Camiguin, bringing once again its trademark deep-dive into the world of marine scientists.

Anchored on the theme *"Oceans in Changing World: Building Resilience in Coastal Communities,"* the science camp, which was held from June 24 to 29, 2022, instilled key knowledge and skills that emphasized the youth's role in addressing climate vulnerability in coastal areas.

Led by DOST-SEI's partner, the University of the Philippines – Marine Science Institute (UP-MSI), a total of 65 student—and teacher—campers from 16 public high schools in the province were taught about the various concepts on hydrological cycle, and climate change, as well as the importance of marine ecosystem and the services and benefits it provides to coastal communities.

Long-time Camp Director, Dr. Aletta Yñiguez of UP-MSI, said that this year's CSYC reinforced the value of hands-on interaction between the campers and the scientists as it could strengthen and enhance learning.

In the span of a week, the campers were able to experience the real-life work of marine scientists

through interactive learning activities and field exposures such as water sampling, snorkeling, plankton observation, and coral reef, seagrass, and mangrove identification.

The Science Camp, which has followed an evolving exposure platform since 2011, has been bridging the knowledge gap on the basics of climate science and the critical impacts experienced in coastal communities among high school students.

The student—and teacher—campers experience the real-life field work of marine scientists, led by camp director, Dr. Alette Yñiguez, as they snorkel to identify coral reefs and fishes, after undergoing a series of lectures and knowledge-building activities.

The campers are taught to classify/ identify the different species of mangroves located in the Katunggan Park, Mahinog, Camiguin.

After collecting water samples from the ocean, the campers are introduced to various plankton concepts and analysis and are able to examine and preserve plankton samples through the microscope live .

SCIENCE EXPLORER

STEM Roadtrips in the New Normal

The nuLab: STEM in Motion Roadtrips in the regions is back after its more than two years of hiatus due to the outbreak of COVID-19. In June 2022, the project made its maiden trip after the pandemic in Northern Iloilo province, serving public high school students from the municipalities of Anilao, Barotac Viejo, and Estancia.

A total of 569 students participated in the STEM learning activities and exciting modules on Math, Chemistry, Geology, and Physics, which were developed by the best scientists and DOST scholar-graduates in the country.

Another roadtrip was conducted in Aurora Province in Baler, serving the students of Aurora National High School from November 8-13, 2022. A total of 246 students participated in the conduct of STEM learning sessions on Robotics, Weather Science, and Oceanography.

The project activities in the regions were featured in some articles online.

DOST Scholar-Graduate Ms. Cherrylene Bolante demonstrates the importance of Polymers as materials used to make many products that we use everyday. Participants to this chemistry module of nuLab are public high school students from Estancia, Iloilo.

DOST Scholar-Graduate and former Balik Scientist, Dr. Vallerie Ann Samson guides public high school students in Iloilo on debunking common misconceptions about Nuclear Science. Dr. Samson also serves as Deputy Director of DOST Philippine Nuclear Research Institute (PNRI).

Students of Estancia National High School performed hands-on activity that measures radiation using a wireless Geiger counter.

Some Photos of the students of Estancia NHS with Dr. Valerie Ann Samson.

DOST Scholar-Graduates

DOST Scholar-Graduates, Dr. Jomar F. Rabajante and Dr. Ariel Babierra introduced to the students of Anilao National High School the mathematics behind computer graphics and how computer fonts are formed.

NEW EPISODES OF RADYOESKWELA AND TUKLASIYENSYA

In 2022, the Science Explorer project continued to bring Science, Technology, Engineering, and Mathematics (STEM) closer to the youth through novel alternative learning methods and platforms.

The project, which started in 2020, continued to produce and promote new episodes of Radyoeskwela and Tuklasiyensya in various online media platforms and radio networks.

A total of 15 new Radyoeskwela episodes were produced and aired in 2022, they are as follows:

Table 35: New episodes of Radyoeskwela produced in 2022

Episode	Airing Date	Online views as of Dec. 2022
1. Destiny	16-Jan-22	3100
2. Money matters	23-Jan-22	4,400
3. Plant Propagation	30-Jan-22	4,100
4. Rate and Ratio	06-Feb-22	2,800
5. Solar Eclipse	13-Feb-22	2,200
6. Lindol	20-Feb-22	2,000
7. Sea Sponge	27-Feb-22	2,800
8. Chemistry of Colors	06-Mar-22	1,400
9. Bakit Blue ang Langit	13-Mar-22	1,300
10. Kiwot Bees	20-Mar-22	1,300
11. Vaccines	27-Mar-22	2,800
12. Volcanoes	03-Apr-22	1,900
13. Gagambahay	10-Apr-22	2,400
14. Area and Volume	17-Apr-22	4,900
15. Vitamins and Minerals	24-Apr-22	1,700

Some snaps from Radyoeskwela Season 2 episodes aired in DZRH Facebook page and radio networks.

The project also continued to produce 15 new STEM video episodes for the Season 2 of Tuklasiyensya sa Eskwela. Listed below are the episodes for the new season:

Table 36: New episodes of Tuklasiyensya Season 2

Module	Module Developer and Facilitator
Marine Science: Estuaries	Dr. Aletta Yñiguez (Marine Scientist and TOWNS 2022 Awardee)
Space Science: A Star is Born	Dr. Rogel Mari Sese (Astrophysicist and Professor, Ateneo De Davao University)
You and I are Full of Cells (Cellular Biology)	Ma. Rica Teresa Dungog (Researcher, UPD Marine Science Institute)
Science Communication	Garry Jay Montemayor (UPLB College of Development Communication)

Looking for Invisible Circles Around Us	Dr. Ariel Babierra (Director, UPLB Office of Scholarships and Grants and DOST Scholar-Graduate)
Fermented Foods for a Healthier Gut and You (Microbiology)	Dr. Marian P. De Leon (Director, UPLB Museum of Natural History)
Bioshields: Mighty Powers of the Earth (Environmental Science)	Peter Jeffrey Maloles (DOST Scholar-Graduate and Oceanographer)
You are your DNA Viruses and Diseases	Lorraine Joyce Del Rosario (DOST Scholar and Biologist, UP Diliman)
The Future by the Numbers	Dr. Jomar Rabajante (Dean, UPLB Graduate School and DOST Scholar-Graduate)
Mirrors and Lenses: Looking Up and Beyond (The Telescope)	Lordnico Medoza (Astronomer, DOST-PAGASA)
Natural Patterns: (Fibonacci Sequence) Basic Trigonometric Patterns	Dr. Antonio Martin Basilio (Scientist Priest and Chemist and Mathematics Professor, Ateneo De Davao University)
Polymers Everywhere	Miko Lorenzo Belgado (Chemist and Enterpreneur, UPLB)
Shaking Earth: Plate Tectonics and the Science of Earthquakes	Charmaine V. Villamil (Geologist and Science Communicator, DOST-PHIVOLCS)

Some snaps during the production shoot of some episodes of Tuklasiyensya Season 2, with scientists and lecturers from the University of the Philippines.

EXPANDING THE REACH OF THE DOST SCHOLARSHIP PROGRAM TO PRIORITY MUNICIPALITIES THROUGH THE #PUSH4SCIENCE: MAGING DOST SCHOLAR KA! CAMPAIGN

As mobility improved in 2022, the DOST-SEI's scholarship campaign set its sights into hybrid methods of reaching its target—aspiring science scholars from various municipalities with low number of scholarship applicants and qualifiers. Utilizing both digital and face-to-face caravans, the project, dubbed as *"#PUSH4Science: Maging DOST Scholar Ka,"* was able to conduct online and in-person campaigns, and produce several Information Education and Communication (IEC) collaterals to promote the DOST-SEI's flagship programs.

Through the years, the scholarship campaign has aimed to promote DOST-SEI's Undergraduate and Graduate Scholarship Programs, collaborating with the SEI's science advocacy projects (i.e., nuLab, Strategic Communication, etc.) and DOST's national events (i.e., National S&T Week and National Biotechnology Week), to capture aspiring scholars in campaign activities, and mobilize DOST Regional Offices, Provincial S&T Centers (PSTC), and DOST Scholars' Associations in campaigning for the S&T Scholarships.

#Push4Science campaign joins nuLab's trip in Anilao, Barutac Viejo, and Estancia.

Online Campaign

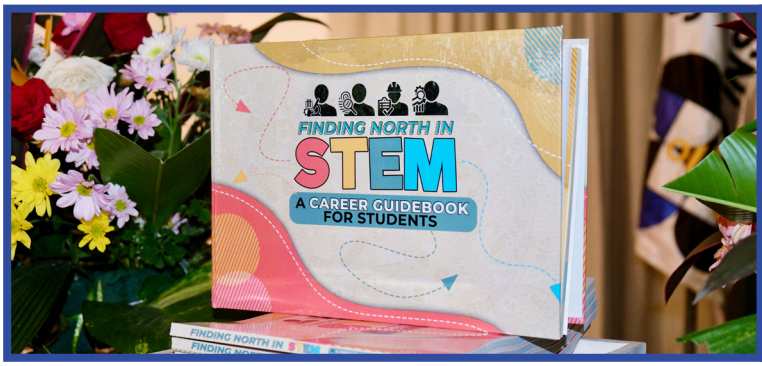
In its first online campaign in 2022, the project partnered with DOST Region 1 for the conduct of the *#Push4Science x Agyamanak Diaries: Inspiring Women in Science,* which featured two outstanding DOST-SEI scholar-graduates who have excelled in their fields amid challenges faced by women in the workplace and life in general. The online campaign, which was conducted in support of the women's month celebration, gathered a multitude of participants on March 30, 2022, via Zoom and the official Facebook pages of DOST-SEI and DOST Region 1.

Sharing their stories as women scientists were Engr. Maria Dorica Naz-Hipe, Director of the Environmental Management Bureau of DENR Region I, and Lorraine Joyce Del Rosario, faculty member at the University of Santo Tomas Senior High School—Science Department. The former finished MS Environmental Engineering via a Joint DOST-DENR Scholarship, while the latter completed her BS Biology under Junior Level Science Scholarship (JLSS), and her MS Biology under the Accelerated S&T Human Resource Development Program (ASTHRDP).

#Push4Science's first online campaign in 2022 features Engr. Maria Dorica and Ms. Lorraine Joyce Del Rosario.

Development of a STEM Career Guidebook for Students

To provide a clear picture on the various career opportunities in Science, Technology, Engineering, and Mathematics (STEM), the project pushed for the development of a STEM Career Guidebook for students, presenting STEM opportunities based on the priority programs of the DOST Undergraduate and Graduate Scholarships. The Guidebook seeks to serve as both a printed and a digital resource for the campaign team and its partners in promoting STEM among aspiring scholars. In collaboration with the University of the Philippines National Institute for Science and Mathematics Education Development (UP NISMED) through the Foundation for The Promotion of Science and Mathematics Education and Research (FPSMER), the Guidebook was launched on Nov. 24, 2022 as part of the year's National Science and Technology Week (NSTW) celebration.



Finding North in STEM: A Career Guidebook for Students is a new publication of the DOST-SEI and FPSMER to help students choose the most suitable STEM course in college that matches their personal attributes and characteristics.

(Left to right) DOST-SEI, UP NISMED, and FPSMER representatives, Mr. Randolf Sasota, Dr. Sheryl Lyn Monterola, and Mrs. Lucille Gregorio pose for photo opportunity during the Ceremonial Turn-over of the Guidebook.

Students, parents, teachers, guidance counselors, and school administrators attend the launching of the STEM Career Guidebook at the University of the Philippines, National Institute for Science and Mathematics Education Development (UP NISMED) on November 24, 2022.

Back on the road: 1st Direct Campaign in two years

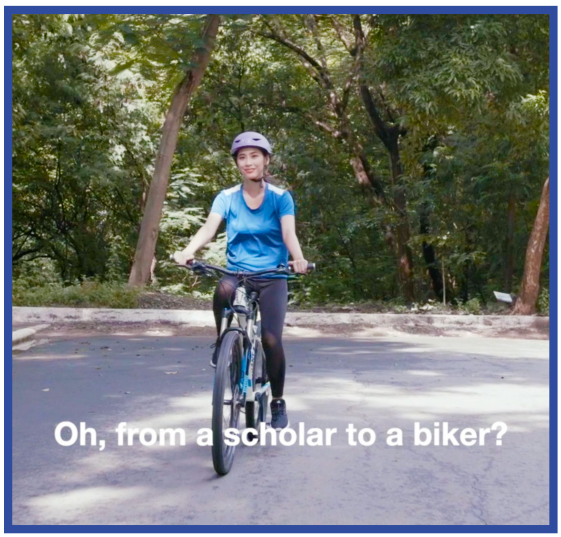
The #Push4Science project has also helped maximize the reach of DOST-SEI's nuLab mobile learning facility, as it joined the latter in its Iloilo Road Trip from June 1-12, 2022. The trip covered schools in the municipalities of Anilao, Barotac Viejo, and Estancia. The team conducted seven sessions per location, engaging more than 500 participants, which included students and teachers.

The project was able to conduct three sessions for teachers, promoting the Capacity Building Program for Science and Mathematics Education (CBPSME) and other graduate scholarship opportunities.

The direct campaign still followed the same Promote-Inspire-Persuade Framework albeit in a shortened program. It engaged participants through a detailed scholarship orientation, and intricate dissemination of IEC materials. Among the many highlights of each session was the playback of the *The Pathfinders* audiovisual presentation, which featured top scholar-graduates explaining the scholarship processes and benefits.

Multilingual Infomercial for DOST Scholarships

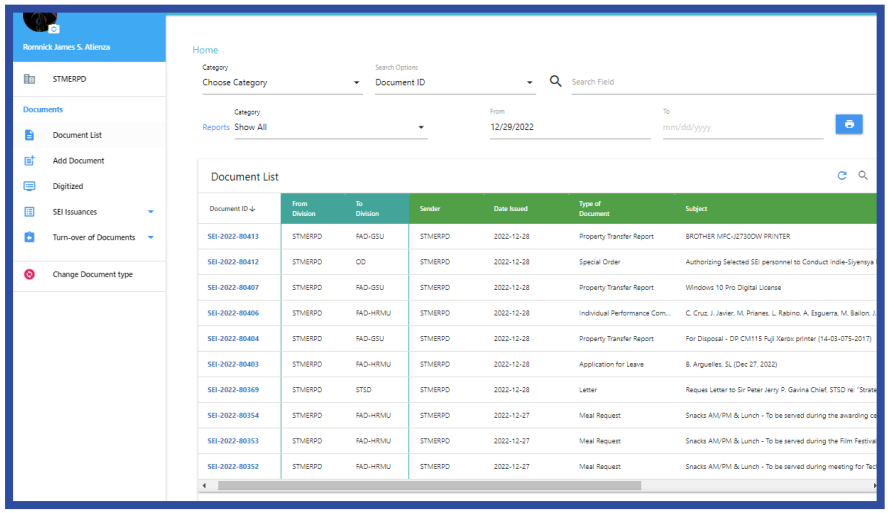
Given the wide reach of the audio-visual media, the project also initiated the production of multilingual infomercials that can serve as additional promotional materials for DOST Regional Offices and Provincial S&T Offices. The infomercial, specifically, narrates a typical day of a DOST-SEI Scholar displaying a multifaceted nature of juggling her studies, hobbies, and other activities. The goal is to showcase scholars and scientists as dynamic individuals contrary to the persisting negative notions.



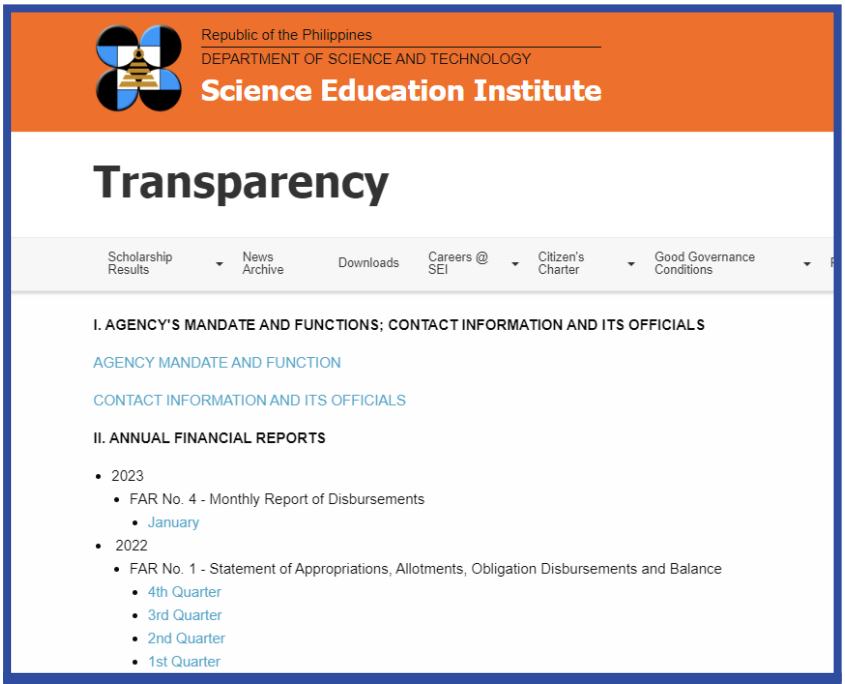
Some snaps from the multilingual infomercial produced and initiated by the #Push4Science project of DOST-SEI.

DEVELOPMENT OF INFORMATION SYSTEMS (IS) FOR THE MANAGEMENT OF DIGITIZED DOCUMENTS

Another remarkable endeavor that the MISU has worked on during the pandemic is the implementation and enhancement of the Electronic Records Management System (ERMS), which is a centralized automated record system that efficiently manages the institute's electronic and digital document records. It keeps track of the incoming and outgoing official documents of every division.



The Electronic Records Management System (ERMS)



The Science Education Institute's Website

Aside from this, the MISU has also continued to maintain and update the Institute's official website to provide current, relevant, and accurate information on its programs and services, while ensuring compliance with the Department of Budget and Management's Transparency Seal requirements.

MODERNIZATION OF ICT FACILITIES AND DEVELOPMENT/ENHANCEMENT OF INFORMATION SYSTEMS IN SUPPORT OF SEI PROGRAMS AND PROJECTS - MITHI

To deliver effective service and keep up with the demands of its stakeholders, the DOST-SEI has acknowledged the need to improve and enhance its ICT infrastructure and services. The MISU has relocated network operations and data center off-site for business continuity through the different adjustments in work arrangements. Currently, twenty-five (25) servers are maintained inside the data center colocation facility, which houses the public servers for the Institute's website and online application systems. The facility is continuously being upgraded for programs and projects that need ICT network service to reach more clients across the country.

Since most activities have remained to be conducted online and hybrid, the Internet connection speed has been upgraded from 65Mbps to 150Mbps. Endpoint security solutions have also been installed on employees' workstations to ensure security in data transfer and protection from malware and viruses. Furthermore, preventive maintenance has been conducted annually on every device connected to the local area network to ensure that it is working effectively and efficiently.

More than fifty (50) IP phones capable of video calls, conference calls, and handling GSM Mobile calls were installed during the year. Hence, the whole system was able to handle calls from clients and stakeholders.

In keeping with the recent developments in Information and Communications Technology, the MISU has made efforts to improve the institutional records' protection from risks including virus attacks, compromised network systems and services, and data privacy and legal issues. It has also revamped the Institute's use of online applications for meetings and collaborations required for capacity-building initiatives among employees. MISU has been conducting ICT Workshops and Orientations regularly to train employees on the use of ICT technologies and their policies and security protocols. For this year, ten (10) workshops and orientations were conducted as follows:

Table 37. List of workshops and orientations

No.	Date	ICT Orientation	Male	Female	Total no. of Participants
1	12 April 2022	Acceptable Use Policy	7	16	23
2	12 April 2022	Acceptable Use Policy	8	18	26
3	19 April 2022	Acceptable Use Policy	7	13	20
4	19 April 2022	Acceptable Use Policy	6	10	16
5	17 October 2022	Acceptable Use Policy	2	5	7
6	17 October 2022	Acceptable Use Policy	6	-	6
7	18 October 2022	Network-Attached Storage and Microsoft One Drive	6	8	14
8	18 October 2022	Microsoft Outlook, Forms, and IP Phone	7	5	12
9	19 October 2022	Microsoft Teams	4	3	7
10	19 October 2022	Microsoft Teams Conference Room and Calendar	4	6	10
TOTAL			**57**	**84**	**141**

Captured during the conduct of the orientation

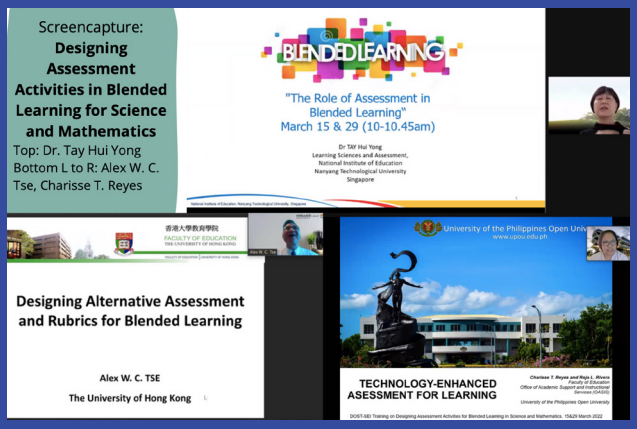
The MISU has also conducted a series of online ICT Security Awareness Training to equip the employees with skills in handling ICT threats and vulnerabilities. In these trainings, they acquired such skills through a Phish Threat simulation activity.

SECTION

03

EMPOWERING EDUCATORS: ADVANCING TEACHING EXCELLENCE

SCIENCE TEACHER ACADEMY FOR THE REGIONS (STAR)



Training of Trainors on Designing Assessment Activities for Blended Learning in Science and Mathematics

In March 15-17 (Luzon Cluster) and March 29-31 (Visayas-Mindanao Cluster), Project STAR launched the Training of Trainors on Designing Assessment Activities for Blended Learning in Science and Mathematics. This is a three-day event held online, with synchronous and asynchronous sessions.

This training is a milestone for Project STAR to unlock the best practices in STEM teaching with focus on designing assessment activities in a blended learning modality. It aims to equip educators with knowledge and tools to create innovative activities to complement other pedagogical processes.

Speakers included professors from the UP Open University, Department of Education, Bicol University, Cebu Normal Univesity, Mariano Marcos State Univesity, and Mindanao State Univesity-Iligan Institute of Technology. International speakers from the National Institute of Education in Singapore and the Faculty of Education at the Univesity of Hong Kong provided a global perspective to broaden educational horizons.

Regional Trainings on Designing Assessment Activities for Blended Learning in Science and Mathematics

After the training of trainors, the STAR trainors contextualized and conducted face-to-face training in their respective regions. Below are the regional trainings conducted:

Venue	Date	No. of Beneficiaries
Baguio City	May 25-27,2022	112
Kabacan, Cotabato	July 6-8, 2022	107
Legazpi City (Region V)	July 19-21, 2022	102
Manila (NCR)	July 20-22, 2022	111
La Union (Region I)	July 26-29, 2022	111
Pagadian City (Region IX)	September 20-22, 2022	130
Cagayan De Oro City (Region X)	September 27-29, 2022	114
Nueva Ecija (Region III)	October 5-7, 2022	107
Iloilo City (Region VI)	November 8-10, 2022	108
Puerto Princesa City, Palawan (Region IV-B)	November 8-10, 2022	94
Cagayan De Oro City (BARMM participants)	November 22-24, 2022	91
Tacloban City (Region VIII)	November 22-24, 2022	110
Nueva Vizcaya (Region II)	December 10-11, 2022	91

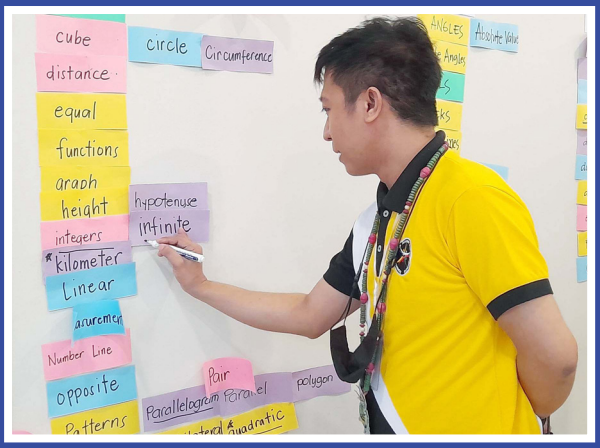
Participants from the Bangsamoro Administrative Region of Muslim Mindanao of the training "Designing Assessment Activities for Blended Learning"

Special Trainings

DOST-SEI, in partnership with the Department of Science and Technology Regional Office I, conducted a training on Language Strategies for Teaching Science and Mathematics last April 20–22. Teachers from various schools in Nagbukel and San Emilio, Ilocos Sur, attended the three-day event. It aims to promote a deeper understanding and appreciation of mathematical and scientific concepts and encourages communication on various topics for both teachers and learners.

The same training was conducted in Aklan on September 13-15, 2022 and in Bacolod City on December 5-7, 2022. Participants were from parochial schools.

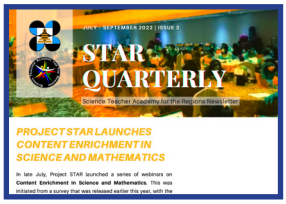
Another special training conducted was in collaboration with DOST NCR and DepEd Caloocan City entitled *"Upskilling of Special Science Teachers in Elementary Schools on Inquiry-based Learning Pedagogies"* on August 18-20, 2022. Participants were teachers from the DepEd Schools Division of Caloocan City. This three-day event aims to demonstrate teaching methods that develop and enhance the curiosity of young learners. This student-centered approach is known to enrich understanding through hands-on exposure to materials and phenomena.



Special training on Language Strategies in Teaching Science and Mathematics

e-STAR

The e-star.ph is an online platform of Science Teacher Academy for the Regions aimed to expand the reach and relevance of STEM education to teachers all over the country. The website has four main features – Share, Teach, Access and Reflect. Share is where the latest news in STEM education are compiled including upcoming conferences and scholarships. STAR training outputs like lesson plans are being uploaded on the Teach feature while a compilation of e-resources are shared in the Access feature. For Reflect, questions are being posed for the teachers to ponder.



STAR Quarterly

The STAR Quarterly contains the latest news/accomplishments of STAR. This is to inform partners and stakeholders of the accomplishments of STAR and upcoming activities. It was published quarterly and sent to the e-mail address of partner agencies, STAR Trainors, former training participants and is also downloadable in the ***e-star.ph*** website.

Webinar Series on Content Enrichment in Science and Mathematics

Project STAR launched a series of webinars on Content Enrichment in Science and Mathematics. This was initiated from a survey that was released earlier this year, with the aim to update and refresh educators on specific topics in time for the new school year.

There were 16 major topics covered—4 each from biology, chemistry, physics, and mathematics—and the series ran until September. Each major topic was also broken down into sub- topics. All webinars were hosted online and free of charge.

For Biology, Prof. Jazzlyn Imperial from Bicol University and Prof. Majal Rani Espiritu from Saint Louis University discussed Cell Division: Mitosis and Meiosis, Mendelian Genetics, Central Dogma: Replication, Transcription, Translation; and Non-Mendelian Genetics. These were held on July 30 and August 6.

Chemistry topics included the Atom on August 3, the Periodic Table and Trends on August 10, Naming and Writing Chemical Compounds on August 17, and Chemical Bonding on August 24. Prof. Vic Marie Camacho from Philippine Normal University and Dr. Luzviminda Quitos from Central Luzon State University were the resource persons for these webinars.

On the other hand, Prof. Jorem Jordan Cawagas from Central Luzon State University and Dr. Nestor Acala from Mindanao State University shared their expertise in Mathematics. On August 4, they discussed Revisiting Algebra: Concepts and Misconceptions, and Basic Differentiation. The second webinar on August 9 focused on Understanding our Truth Values: An Overview of Logic, and Application of Derivatives.

The last four major topics centered on Physics were Electricity and Magnetism on August 9, Light and Electromagnetic Waves on August 22, Projectile Motion on August 26, and Heat and Heat Transfer on September 2. Prof. Jo-Ann Cordovilla from Bicol University and Dr. Jonathan Manigo from Caraga State University taught these topics.

Below is the summary of the number of participants in each session:

Event	Date	Platform	Actual Participants		Total
			Male	Female	
1. Content Enrichment in Science and Mathematics - Cell Division	July 30, 2022	Zoom and Facebook	99	214	**313**
2. Content Enrichment in Science and Mathematics - Mendelian Genetics	July 30, 2022	Zoom and Facebook	109	256	**365**
3. Content Enrichment in Science and Mathematics - The Atom	August 3, 2022	Zoom and Facebook	242	655	**897**
4. Content Enrichment in Science and Mathematics - Revisiting Algebra	August 4, 2022	Zoom and Facebook	331	599	**930**
5. Content Enrichment in Science and Mathematics - Basic Differentiation	August 4, 2022	Zoom and Facebook	303	313	**616**
6. Content Enrichment in Science and Mathematics - Non - Mendelian Genetics	August 6, 2022	Zoom and Facebook	120	77	**197**
7. Content Enrichment in Science and Mathematics - Central Dogma	August 6, 2022	Zoom and Facebook	86	185	**271**
8. Content Enrichment in Science and Mathematics - Application Derivatives	August 9, 2022	Zoom and Facebook	207	303	**510**
9. Content Enrichment in Science and Mathematics - Understanding Our Truth Values	August 9, 2022	Zoom and Facebook	168	256	**424**
10. Content Enrichment in Science and Mathematics - Periodic Table and Trends	August 10, 2022	Zoom and Facebook	147	441	**588**
11. Content Enrichment in Science and Mathematics - Electricity and Magnetism	August 15, 2022	Zoom and Facebook	116	152	**268**
12. Content Enrichment in Science and Mathematics - Naming and Writing Chemical Compounds	August 17, 2022	Zoom and Facebook	118	299	**417**
13. Content Enrichment in Science and Mathematics - Light and Electromagnetic Waves	August 22, 2022	Zoom and Facebook	56	81	**137**
14. Content Enrichment in Science and Mathematics - Chemical Bonding	August 24, 2022	Zoom and Facebook	80	189	**269**
15. Content Enrichment in Science and Mathematics - Projectile Motion	August 26, 2022	Zoom and Facebook	52	82	**134**
16. Content Enrichment in Science and Mathematics - Heat and Heat Transfer	September 2, 2022	Zoom and Facebook	49	61	**110**
TOTAL			**2234**	**4102**	**6336**

Finalists of the 2022 Search for the Brightest STAR

2022 Search for the Brightest STAR

On November 17, the 2022 Brightest STAR Awarding was held in Sofitel Philippine Plaza Manila. Two (2) public school teachers were awarded for their exemplary work in STEM education with K-12 students. Mr. Salvador Avisa of Ilocos Sur National High School in Region I was honored for his work in science education, while Mr. Rigor Bueno I of Mariroc High School in Region V was lauded for his work in teaching mathematics.

Now in its 9th year, DOST-SEI and Project STAR continues to advance science and mathematics education across the country by providing training on innovative teaching strategies. The Brightest STAR Award seeks to recognize and reward teacher-participants who have shown exceptional work in educating and empowering students through innovative teaching methods and strategies from their STAR training.

DOST-SEI received 78 nominations for the 2022 Brightest STAR Award from all over the country. Of these, six national finalists were chosen, including Ms. Mary Grace Lorca of Salngan National High School and Ms. Katherine Villar of Bukidnon National High School for science; and Mr. Vincent Butch Embolode of Bayugan National Comprehensive High School and Ms. Ingrid Peñaflor of Rupagan Elementary School for Mathematics.

Establishing Linkages with Academe, Research Institutions, and Industry for Capacity Building in STEM Education

SciChat

SciChat was launched to serve as a platform for connecting and interacting with STEM specialists online to get updates on the current trends in STEM, locally and internationally. The following episodes were conducted:

Episode 1: Communicating Science to the Public

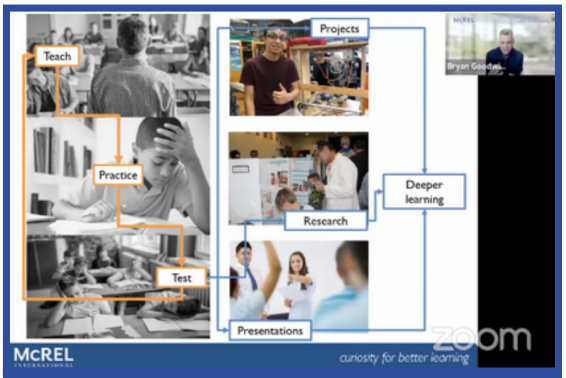
The episode started with Mr. Mark Ivan Roblas of DOST-PCIEERD, explaining the landscape of science communication in the country, the challenges, and best practices. He stressed that it is necessary to keep the receiver in mind and strike a balance between jargon and oversimplified language. On the other hand, Mr. John Warner Carag of the UP National Institute of Geological Sciences shared his experience in bringing science to far-flung areas through SEI's Science Explorer and other programs. Introducing concepts in a high-touch environment can spark interest and build confidence in young learners. Pairing the appropriate technology with lessons is part of a STEM teacher's role as a communicator.

Episode 2: Street Science

Street Science in Australia was established by Steve Liddell which aims to engage and excite learners inside and outside the classroom. Teaching science in appealing and entertaining methods, paired with contextualized learning, positively impacts kids, reinvigorates educators, and improves the community's view of education. Liddell emphasizes teaching with context to make the content relatable to students. He encourages making lessons experiential and practical where possible, so science can be fun. Setting up opportunities for students to participate also aids in retention and overall progress.

The first demonstration of Liddell, M & M & S, is a simple activity using just colored candies, a plate, and water. From these materials, teachers can discuss various topics such as solubility, properties of materials, density, the color wheel, and more. Another engaging activity is Cloud in a Bottle in which educators can demonstrate how clouds are formed using a plastic bottle, alcohol, a foot pump, and a rubber stopper with a tire valve. Other applicable concepts include evaporation and pressure systems.

It served as an inspiration of how we must be innovators who push limits and break barriers to achieve the transformational change we need.



Bryan Goodwin discusses the traditional learning cycle versus a path to deeper learning

Episode 3: Using Brain Science to Make Learning Stick

In this episode, Bryan Goodwin recommends a six-phase model of memory and learning. It starts with making students become interested, as people remember things that make them curious. And because learning requires focused effort, educators should help students set and monitor their own goals. Once they do, provide visualizations and concrete examples, and engage peer groups in processing their new learning. Students should also practice and reflect on what they learn in order to apply it in the future. These strategies can make students more curious, more engaged, and more likely to enjoy learning.

Participation to the Lesson Study Immersion Program

In line with its commitment to deliver professional development opportunities for teachers, DOST-SEI Project STAR trainors and SEI personnel joined the Lesson Study Immersion Program 2022 held at Tokyo Gakugei University in Japan. Organized by IMPULS (International Math- teacher Professionalization Using Lesson Study) and Lesson Study Alliance, this program is a time for researchers, administrators, and educators to exchange ideas to improve education systems for mathematics.

Participants observed several live research lessons, post-lesson discussions, and everyday mathematics lessons in elementary and secondary schools. In addition, they also had the chance to interact with teachers and students from schools in Japan. Esteemed researchers in Lesson Study and mathematics education in Japan, including Profs. Toshiakira Fujii, Tad Watanabe, and Akihiko Takahashi, led discussions with the participants before and after each research lesson observation. These discussions provided a deeper understanding of Lesson Study in Japan and the Japanese pedagogical approach of teaching mathematics through problem-solving.

Including the Philippine team, 19 colleagues participated in the immersion program. Other representatives included educators from Denmark, Fiji, and the United States.

Philippine Team at the Lesson Study Immersion Program

Strengthening the Capacity of Science Teachers on Disaster Risk Reduction and Management

Training for STEM Teachers and DRR Coordinators

On May 19-21, the training *"Strengthening the Capacity of Teachers on DRRM"* was conducted in Batanes.

Webinar on School-Centered Disaster Resilience

ON June 22, Prof. Seiji Suwa from the University of Hyogo shared his expertise in a webinar entitled *"School - Centered Disaster Resilience."* He emphasized that shifting from a reaction-centered response to a preparedness-centered one is essential to build resilience. When resilience is stronger than possible hazards, the community can mitigate the damages from disasters. Prof. Suwa also enumerated several activities for children as an introduction to disaster education, which he recommends schools to practice every day.

Participants of the training after the site visit in Batanes

BRINGING NEW AND EMERGING STEM TRAININGS FOR TEACHERS

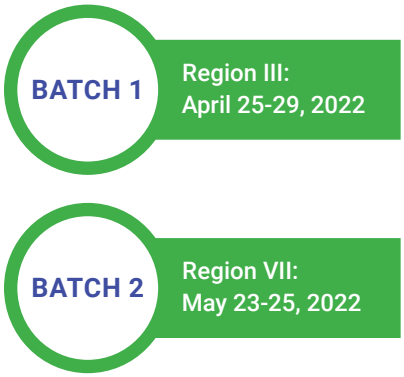
As the Filipinos continue to thrive in a post-pandemic world, we are now focused on addressing the learning losses. As schools also continue to prime towards gradual transition, the adoption of new learning and teaching modalities remains a challenge. But the DOST-SEI continues to embrace the new opportunities brought by the pandemic. Trainings have been more innovative in terms of content and delivery.

This year, a total of 7,618 teachers were reached by the following specialized trainings.

The 7Es in Teaching Physics

Pandemic or no pandemic, the DOST-SEI will not stop finding means to continue its commitment of serving, nurturing, and cultivating talents and skills of our educators. On its 5th year, the training for grade 8 non-physics major science teachers, now dubbed as the 7Es in Teaching Physics, reached two more regions in 2022 via online training. The training that gained a lot of compliments, because of its effectiveness and richness in activity and content continues to reach and touch educators all over the country.

The online training that was designed and perfected during the 4 batches of training in 2021 has now trained teachers from Regions III and NCR respectively.



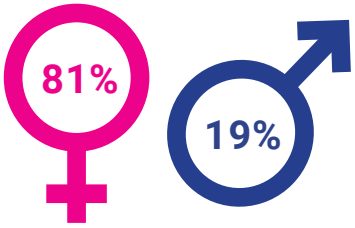


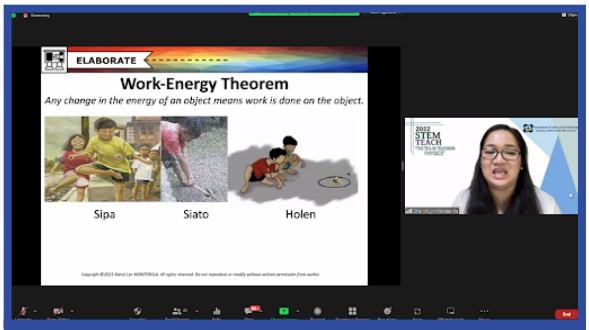
Table 38: Distribution Of Participants According to Sex

Batch	Female	Male
1	55	18
2	67	10
TOTAL	**122**	**28**

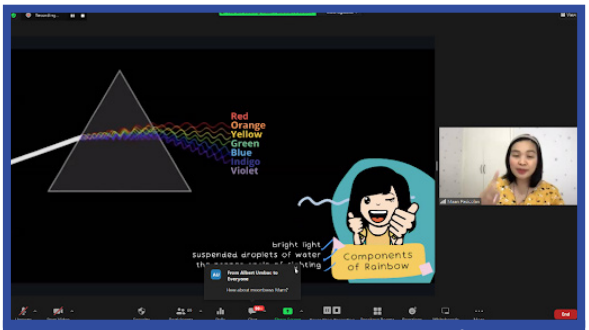
Aside from the online engagements, lectures, presentations, and discussions, one of the most commended parts of the training implementation was the creation of a Facebook Group where all announcements and assignments/take home activities of teacher participants done asynchronously were posted and commented by the resource persons, co-participants, and SEID project implementers. This served as an avenue for more collaborations and interactions amidst the distance between the participants as well as the trainors. Each activity was more appreciated because of this simple but impactful feature of the online training. The utilization of social media made this online training more enjoyable and worthwhile. With this, DOST-SEI sought to use other social media platforms in creating meaningful training for our educators that would enhance not only their knowledge but also their virtual social skills.

Another effort of the team was the research paper that they are working on, given the project has now run for 5 years. Ms. Ruby Caroliza D. Laña, former Chief of the SEID and Dr. Sheryl Lyn C. Monterola, the Director of UPNISMED spearheaded the study that started in 2021. A pre and post-test were given to teacher participants in the training conducted in 2021. With the data gathered, a Focus Group Discussion that was organized by the DOST-SEI in coordination with the DepEd Regional Offices. The DOST-SEI Training Unit team led by Ms. Jobelle P. Gayas, through the DepEd RO, invited selected participants from the 2021 training for the said FGD that was conducted virtually via Zoom. It was attended by 17 teachers and facilitated by the Team Pisika and the DOST-SEI project team members on January 14, 2022.

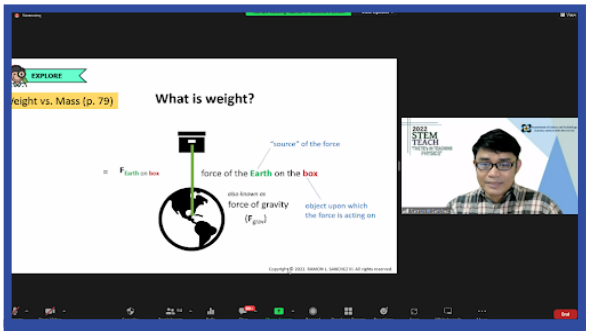
A face-to-face planning meeting with Team Pisika followed on May 7, 2022, in Pasig City where the timeline of activities were plotted and topic assignment for the paper writing were agreed upon by the team. The paper that will be produced from this study topic assignment for the paper writing WAS agreed upon by the team.



Dr. Sheryl Lyn Monterola discussing about Work-Energy Theorem



Ms. Ma. Angelie Pasicolan showing the components of rainbow in Module, "Light"



Mr. Ramon Sanchez discussing the difference of Weight and Mass

The 7Es in Teaching Chemistry

As part of the DOST-SEI's growing initiative to capacitate teachers who are non-science majors in the teaching field, another set of modules for the field of Chemistry that started its development in 2021 is now being used by the institute to capacitate grade 10 science teachers.

The Chemistry Team led by Dr. Edwehna Elinore D. Paderna of the UP College of Education competed the initial draft of the module in February and its 1st printing was commissioned in March which led to its pilot training and user acceptance testing on April 5-8, 2022, in Tagaytay City with 14 teachers from Region IV-A as participants. The pilot training not only aims to validate the content of the topics and effectiveness of the modules but also served as an avenue to test the appropriateness of activities and the materials specified in each activity.

The feedback and observations of the teachers, writers and project team were gathered during the activity, and a 2-day workshop was held on May 2-3, 2022, in Pasig City to discuss, evaluate, and revise the content of the modules as needed. The revised modules were submitted in June and the printing of the first 100 copies was finished and delivered by August. Two teacher trainings were then conducted in Regions X and NCR.

BATCH 1 — Region X: Cagayan de Oro City, August 22-25, 2022

BATCH 2 — Region X: NCR - Quezon City, November 12, 18, and 26, 2022

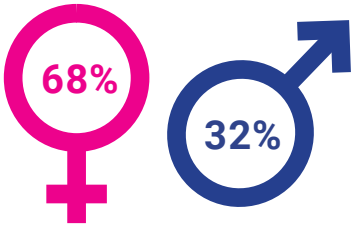


Table 39: Distribution Of Participants According to Sex

Batch	Female	Male
1	33	7
2	22	19
TOTAL	**55**	**26**

The trainings in regions 10 and NCR were a resounding success, because of the support of their very cooperative and energetic Regional Science EPS: Dr. Nick Pañares and Ms. Micah Pacheco. Both were very visible and hands-on in terms of monitoring their teachers and making sure that they are doing well and participating in the sessions. This is another manifestation of success that goes hand in hand with the giver and receiver. In every effort that DOST-SEI

exerted to impart knowledge and skills to teachers, it is but fitting that it receives a positive reception from its beneficiaries from the DepEd to be able to say that the effort was a success.

The team had to deviate from the original training design in the batch 2 training held in NCR to be able to adhere to the DepEd Memorandum of undisturbed classes due to attendance of teachers to training. It was challenging due to the relatively long period of time in between sessions but still it gained positive feedback from the attendees. It was both a sacrifice for the teachers as well as the training team, but it was a success nonetheless.

Aside from the enjoyable, fun, easy to follow, and meaningful activities, one of the key highlights of the trainings were the CPD points it gained from the PRC. The training in region 10 gained 12CPD points while the training in NCR had 15CPD points. This made the training more appealing to the teachers. This is one of the many ways that shows how dedicated DOST-SEI is in upgrading the services it offers in accelerating S&T human resources in the country, particularly the educators that will impart knowledge to the youth.

Dr. Edwehna Elinore Paderna discussing about the Overview of the Chemistry Teaching Module

Teachers performing the experiment in the module, "Biomolecules."

Ms. Hazel Joyce Ramirez discussing about the module, "Rates of Chemical Reaction".

Facing the Challenges in Teaching Elementary Mathematics

SEI provides free trainings to capacitate elementary mathematics teachers and help them face the challenges of teaching the subject. This year, a total of 101 elementary mathematics teachers responded to SEI's invitation to the two batches of online training on July 18-22, 2022 and August 8-12, 2022. Two experts Dr. Ma. Nympha B. Joaquin and Ms. Lady Angela M. Rocena presented and discussed topics about the nature of mathematics, mathematics framework, trends in teaching elementary mathematics concepts, numbers and number sense, geometry, measurements, patterns and algebra and statistics and probability. More female teachers participated as shown in the breakdown of participants in table 40.

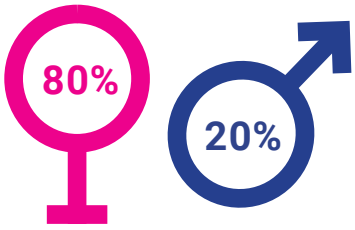
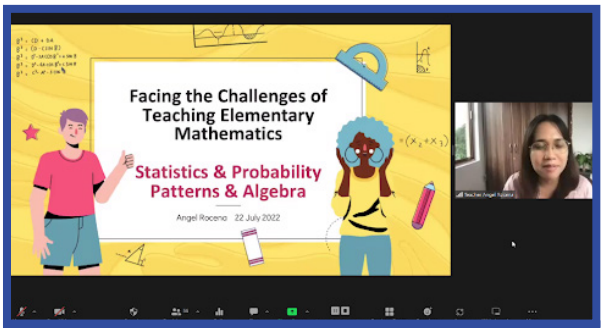
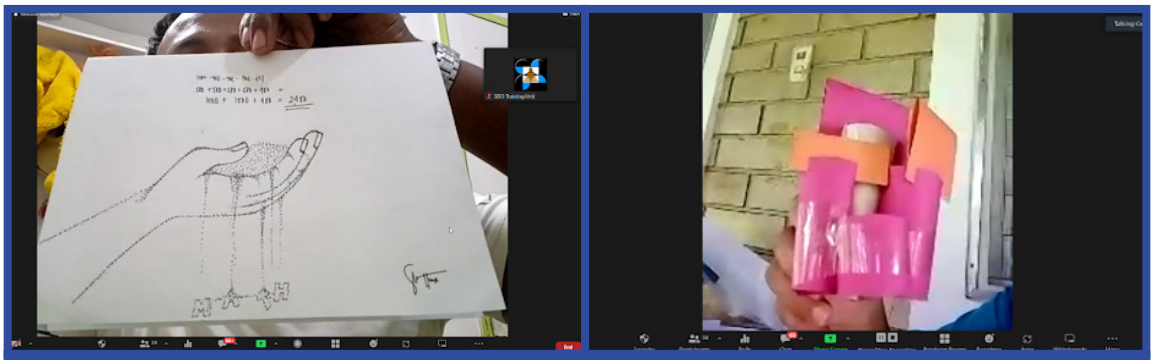


Table 40: Distribution of elementary mathematics teachers attendees

No. of Registered Attendees		
Female	Male	Total
87	14	101



Teacher Angel Rocena discussing about "Statistics and Probability, Patterns and Algebra"



The participants showing their activity outputs to the group.

Communicating STEM through Storytelling

Science and mathematics are fun to learn, so even at an early age, science and mathematics concepts can already be introduced to children. With this, storytelling is one good strategy to communicate STEM concepts in a fun, engaging, and developmentally appropriate teaching approach for children.

The webinars ran from September 14-15, 2022, wherein 3,566 joined online. The were live storytelling sessions featuring the stories from the DOST-SEI-developed storybooks. The resource persons from UP Child Development Center, Diliman, explained the storytelling and discussed the science and mathematics concepts found in the DOST-SEI storybooks.

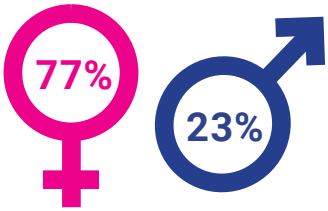


Table 41: Distribution of online attendees of Communicating STEM through Storytelling webinar

No. of Attendees		
Male	Female	Total
836	2730	3566

Resource Persons during the webinar, Communicating STEM through Storytelling

Robotics in STEM Teaching

This is a specialized training activity under STEM Teach which focuses on using of robotics as one of the strategies in teaching STEM. This provides approaches in advancing STEM education with the use of robotics and other innovative methods of integrating robotics in various school subjects.

In coordination with DepEd Division of Cavite City and in partnership with the resource persons from Philippine Science High School CALABARZON and Commonwealth High School, the first run of robotics training was successfully implemented on November 26-27, 2022 in Tagaytay City with the participation of 50 teachers from DepEd Division of Cavite City. The training made use of PRISM robotics kits, and every school received one kit.

Participants receiving their robotics kits and during the training, Robotics in STEM Teaching.

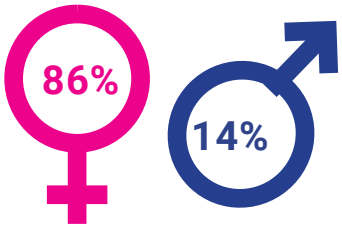


Table 42: Distribution of senior participants per batches of trainings

Batch	Female	Male
1	69	10
2	59	11
3	61	6
TOTAL	189	27

Science with Seniors

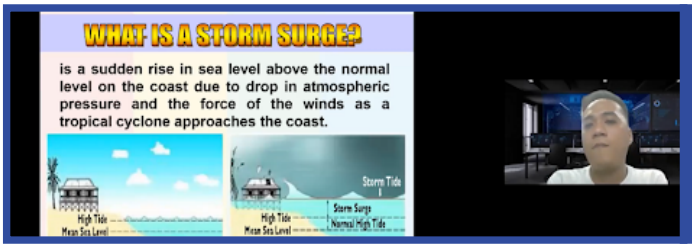
Our commitment to capacitate the senior citizens, one of the vulnerable groups during the pandemic, did not halt as this year we have reached 216 science and mathematics teachers from Regions I, V, and VI, who are on the retirement age or nearing retirement age. Three batches of training were conducted online. The topics presented sparked participants' interest as they shared that having served many years in the teaching field, through the training, they felt more valued.

The training focused on equipping the participants with the scientific understanding and appreciation of the changes in their total well-being, giving them an overview of the rights and privileges of senior citizens in the country, and discussing with them the disaster awareness and preparedness.

Despite the inevitable shortcomings of online platforms, such as low internet bandwidth which results to unstable connection, the trainings were still favorable, informative, and relevant to the participants given their ages. The participants actively took part in all activities prepared by the speakers and they found the training helpful for them to cope with and serve as an avenue to prepare themselves in their future endeavor after retirement.

The teacher-participants started the two-day online training with a purposeful retirement workshop, facilitated by Mr. Al Marcial Bengco, Chief Learning Architect of The Foundry Learning Lab. The teachers participated in one of Mr. Bengco's activity using google jam board.

Dr. Jalotjot discussing different protective barriers that can be used to avoid contacting viruses.



Mr. Ordinario from DOST- PAGASA discussed Storm Surge to the participants of Region VI which is known to be a costal region.

Mr. Tan from DOST-FNRI presented to the participants the ideal menu for their age.

Table 43: Distribution of beneficiary schools in Ilocos Sur and La Union

Province	School	Schedule
Ilocos Sur	Sugpon CS	16 March 2022
	Amilongan ES	17 March 2022
	Anaao ES	18 March 2022
La Union	Linuan ES	23 March 2022
	Binatadan ES	24 March 2022
	Porporiket ES	25 March 2022

Indigenization in Science and Mathematics Education

For quality assurance and to check the improvement and enhancements that may be needed before finalizing the outputs, the fourteen indigenized lesson plans developed in 2021 were field tested face-to-face in the following six beneficiary schools in Ilocos Sur and La Union (Region 1):

The Resource Persons, Dr. Wilfredo V. Alangui (UP Baguio) and Ms. Melodee T. Pacio (Philippine Science HS-main campus), trained and guided the

beneficiary teachers throughout the indigenization process. Together with the DepEd Region I IP Focal Persons and SEI project personnel, they visited these schools to implement the indigenized and validated lesson plans in the classrooms following the schedules shown in the table above. Each of the six schools had one teacher demonstrate/facilitate their indigenized lesson plans during the field tests while being observed by the resource persons and the DepEd personnel.

IMPLEMENTATION OF INDIGENIZED LESSON PLANS IN THE CLASSROOM

The learners listen to Ms. Precilla L. Ordoño as she facilitates the lesson on squares and rectangles (Ammoyo) Sugpon CS.

Ms. Violeta V. Tabor introduces the lesson on lines and symmetrical designs (Manbeey) at Binatadan ES.

Discussing lesson on Panagrama (likelihood of an event) at (a) Porporiket ES and performing activity on Bingay (equal sharing) at (b) Linuan ES

DISCUSSION AFTER IMPLEMENTATION OF INDIGENIZED LESSON PLANS

Post-lesson discussion at Linuan ES

Post-lesson discussion at Porporiket ES

In Amilongan ES and Anaao ES, the conduct of face-to-face activities was restricted due to the pandemic. Despite this, field test activities pushed through and were successfully conducted in Apang ES and Dalawa ES for Amilongan ES and Anaao ES, respectively.

Lesson implementation at Apang ES (for Amilongan ES)

Post-lesson discussion at Dalawa ES (for Anaao ES)

During the field tests, the IP Community Elders were present in the schools they represented to facilitate the teaching-learning process among the participating IP learners.

Lesson implementation at Apang ES (for Amilongan ES)

Mr. Cenon of Linuan ES explains equal sharing (Bingay) integrated in the lesson.

The table below presents the distribution of pupil participants by sex.

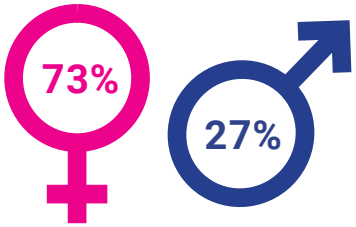


Table 44: Distribution of pupil participants in Ilocos Sur and La Union

Province	No. of Pupil Participants		
	Female	Male	Total
Ilocos Sur	16	37	53
La Union	16	51	67
TOTAL	**32**	**88**	120

REACHING MORE TEACHERS THROUGH WEBINARS

As the new normal in education, the use of online learning tools and platforms has been in demand. That is why, to reach more educators amidst the ongoing threat of pandemic, DOST-SEI continued the webinars focusing on inclusive education.

Ethnomathematics and Culturally Related Mathematics Education (CRME)

To spread awareness and understanding of Ethnomathematics and CRME in the Philippines, SEI conducted a short webinar on 28 October 2022 via Zoom. The webinar was open to mathematics teachers nationwide who are interested in the concept of Ethnomathematics and teaching mathematics integrated with culture.

Dr. Wilfredo V. Alangui (UP Baguio) and Ms. Melodee T. Pacio (Philippine Science HS-Main Campus), the Resource Persons for the webinar, clearly presented the topic and keenly responded to the questions of participants during the Question-and-Answer session in the webinar.

High interest in the topic of the webinar is evident in the number of registered participants and attendees as shown in the table below.

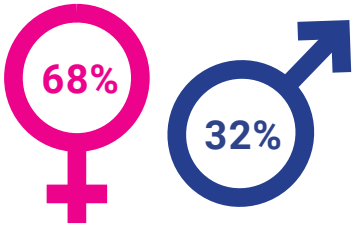


Table 45: Distribution of registered participants and attendees of the short webinar on Ethnomathematics and CRME

No. of Attendees		
Male	Female	Total
874	1887	2,761

Resource Persons during the webinar, Ethnomathematics.

Continuous support to DOST-SEI RA 10612 scholar-graduates through training

The training that had started in 2017 and reached hundreds of scholars in 8 regions in the country is continuing its mission to somehow bridge the gap that greatly affects the performance of the DOST scholars as educators in the classroom. The lack of pedagogical knowledge and skills in teaching creates a barrier between teachers and the learners. Thus, aside from providing support to the education of these

scholars, DOST-SEI further extends its helping hand to selected non-education major graduates as they undergo an intensive 4-day training workshop. The training-workshop aims to give the participants an overview of the teaching-learning environment, and expose them to several practical teaching strategies and hands-on activities on lesson plan making and demo teaching.

Two face-to-face trainings were conducted this year in Regions I and IV-B. DOST-SEI partnered with the faculty of the College of Teacher Education of the Mariano Marcos State University and the Palawan State University that served as subject experts, mentors, and resource persons during the 2 batches of training.

The 1st batch was held in La Union on August 2-5, 2022. With the assistance from the DOST Regional Office 1, headed by its Regional Director Dr. Armando Q. Ganal and its Regional Scholarship Coordinator Ms. Adelisa Florendo, the training capacitated 37 scholars from the region. The tracing and communication with the participants were made easy, because of the help that the RO extended in the project.

With the assistance from the DOST RO IV-B, headed by their director Dr. Josefina F. Abilay and their Regional Scholarship coordinator
Ms. Via Karen Maganggo, and the experts from the Palawan State University College of Teacher Education, the batch 2 training that was held in Puerto Princesa, Palawan on September 26-29, 2022, capacitated 23 scholars from the different island provinces of the region.

The force of nature challenged the training team before the training even began. A typhoon was about to enter the PAR 2 days before the training. Travel advisories and travel suspensions affected some of the provinces where the participants were coming. With this at hand, the DOST-SEI team and the DOST RO decided to transport some participants to Manila a day early to minimize the possibility of being stranded in ports. In the end, five scholars could not join the training because of the cancellation of trips due to inclement weather conditions. Aside from this challenge, the training pushed through and was a success.

The participants were very thankful that they attended the training; most of them were relieved of their uncertainty as they had no idea what to expect when they render return service as teachers. DOST-SEI once again goes the extra mile to serve its scholars by providing quality trainings that they can use while waiting for their formal training from the Philippine Normal University.

BATCH 1
Region I:
La Union
August 2-5, 2022

BATCH 2
Region IV-B:
Puerto Princesa City
September 26-29, 2022

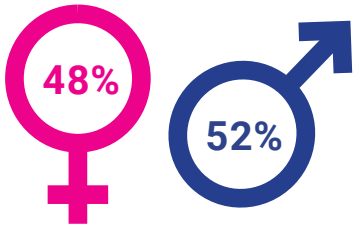


Table 46: Distribution of participants attended training

No. of Attendees		
Male	Female	Total
1	19	18
2	10	13
TOTAL	29	31

Prof. Rosabel Acosta during the training, Capacitating Scholar-Graduates with Pedagogical Skills.

STRATEGIC COMMUNICATION PLAN FOR THE PROMOTION OF S&T HRD, SCIENCE EDUCATION INNOVATION AND YOUTH SCIENCE PROGRAMS

STRATCOM: Taking strides to communicate science

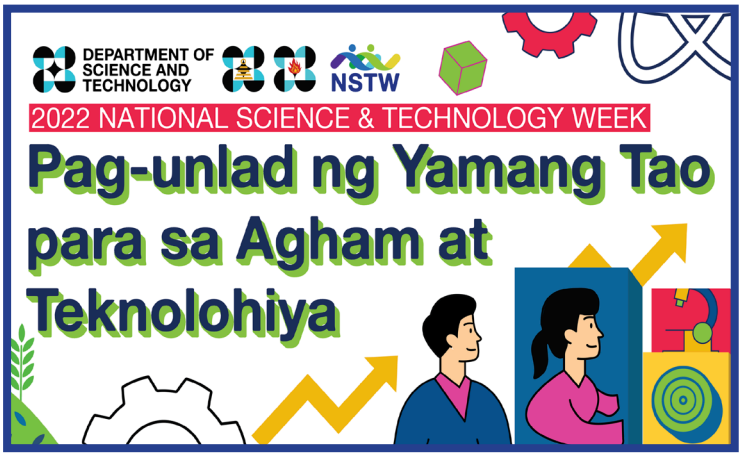
With the Industry 4.0 paving the way for a more connected world, the DOST-SEI has continued to strengthen the use of digital and online platforms to reach its stakeholders and audiences and ensure the greater reach of its various Scholarships, Science, Technology, Engineering and Mathematics (STEM) Promotions, and STEM Education Innovation programs. Through this, engagement with stakeholders and impact of the projects have been sustained.

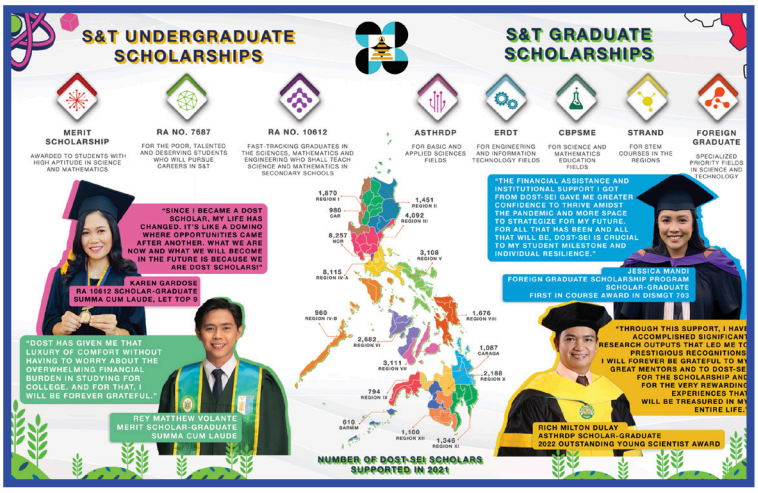
NSTW

The Institute has showcased its various programs as it participated in the 2022 National Science and Technology Week (NSTW), which was anchored on the theme, *"Agham at Teknolohiya: Kabalikat sa Maunlad at Matatag na Kinabukasan"* During the week-long celebration, DOST-SEI organized the following events:

1. **STEM Education Exhibit at The World Trade Center**

   The DOST-SEI, together with the Philippine Science High School System (PSHSS), chaired the STEM Education cluster exhibit during the festival. In the exhibit, the Institute's various scholarship programs and STEM promotions projects were showcased, alongside the distribution of promotional materials for the upcoming STEM competitions and other STEM publications.





2. Science Film Festival 2022

The DOST-SEI's partnership with the Goethe Institut Philippinen has continued with the celebration of the 2022 Science Film Festival. This year's SFF carried the theme *"Equal Opportunities in Science."*

In partnership with the Philippine Science High School (PSHS), an opening program was held in-person at the PSHS Auditorium in Quezon City. The program was attended by 172 students and representatives from Rolls-Royce, a key partner in Southeast Asia. A screening of the film entry *"Miracle Body: Breaking Limits with Hyper-Adaptability"* was held together with a science activity participated in by the PSHS students. The whole program was also streamed via Zoom, where other students, teachers, and officials from Goethe joined.

After the opening program, simultaneous screenings were held in various campuses of the Philippine Science High School (PSHS) system.

Media Placement

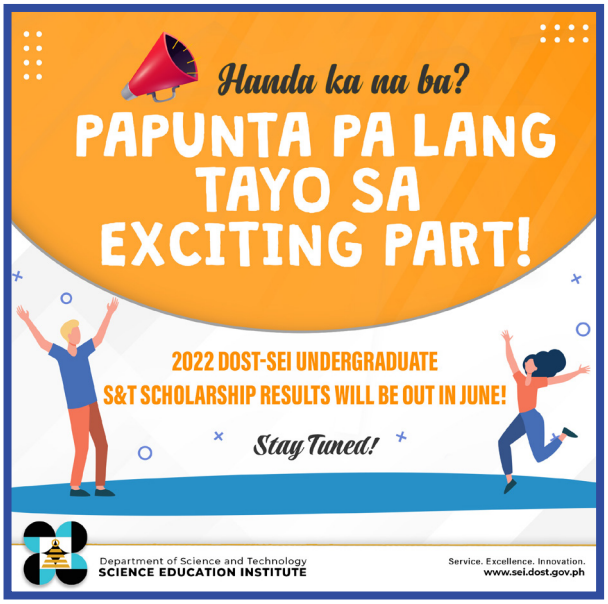
To further the reach of SEI programs and projects, the DOST-SEI communications team developed and disseminated 27 press releases to various mass media outlets, generating at least 295 media placements, which include TV and radio spots across multiple community and major broadcast networks. Online placements remain to be the main driver of the dissemination as articles got mirrored 166 times in various online media outlets.

Social Media Engagement

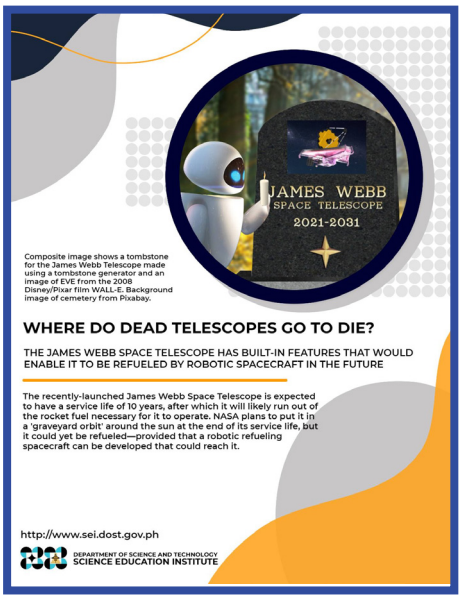
Despite the abundance of information and various content in the online landscape, the DOST-SEI has remained relevant and has maintained its presence in various platforms through novel solutions and practices in communication.

The Science Education Institute – Department of Science and Technology Facebook page registered 79,660 new followers/likes and a total of 275,831 followers, as of December 31, 2021, securing and solidifying the reach of every communication strategy done through the page. For 2021, the page also reached 6.7 million people and had 840,785 visits.

Some original content produced through the SEI Facebook page were the following:

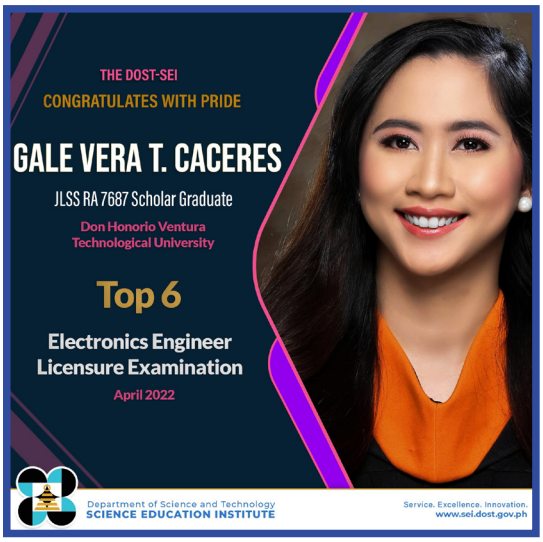


1. SCIENCE TRIVIA



2. OFFICIAL ANNOUNCEMENTS/ REMINDERS

3. CONGRATULATORY POSTS



4. PROGRAM UPDATES

5. INSTITUTIONAL EVENTS

6. ANNUAL CELEBRATIONS

The announcement of application extension to the 2023 DOST-SEI Undergraduate Scholarship gained the highest stats in the page, with 1,160,167 reach, 29,820 reactions, and 7,112 shares.

SECTION

04

TRIUMPHS UNVEILED: CELEBRATING ACHIEVEMENTS

The team from Bansud National High School was recognized as one of three (3) Youth Innovation Prize Awardees, with their winning project "SINAGTALA: AUTOMATED DETECTION KIT FOR SELECTED EYE DISEASES USING ENSEMBLE FRAMEWORK OF DEEP LEARNING NEURAL NETWORKS (CNN x ANN)".

Championing their project "DEEP NEURAL NETWORK EMBEDDED ON A MICROCONTROLLER FOR DETECTION OF THE BIRD CALL AND SONGS OF THE PHILIPPINE EAGLE," the Philippine Science High School – CALABARZON Campus team also emerged as one of the three (3) Youth Innovation Prize Awardees.

Completing the year's roster of Youth Innovation Prize Awardees was the team from Ramon Teves Pastor Memorial Dumaguete Science High School, with their very own "PROJECT KIDLAT: INTER-ISLAND AUTOMATED UAV FOR MEDICAL DELIVERY AND EMERGENCY RESPONSE"

Demonstrating their unbounded creativity and competence through their innovative projects, Philippine Science High School – CALABARZON Campus' Alexander Banados and Amina Javellana and Ramon Teves Pastor Memorial Dumaguete Science High School's John Raymond Enolpe were conferred the GBF's Young Scientist Award (YSA) and were granted the "STEM Scholarship for Excellence."

5TH IMAKE.WEMAKE: CREATE. INNOVATE. COLLABORATE.

It was a thrilling and innovative journey for the young minds behind the 5th cycle of the imake.wemake: create.innovate.collaborate competition, which was launched in August 2021. Twenty (20) school-teams were selected to undergo an online Technical Training, Workshop, and Mentoring program conducted from February 21 to 24, 2022, helping hone the talented and dedicated participants' skills in communication, computation, technology, critical thinking, and problem-solving.

With the help of Kit-of-parts provided by the DOST-SEI during the technical training & workshop, the finalists spent months perfecting their working prototypes. After a series of consultations, three school-teams were awarded the Youth Innovation Prize (YIP) Award, during the competition's final presentation and awarding ceremony.

The three winning schools were 1) Bansud National High School- Regional Science High School for MIMAROPA, 2) Philippine Science High School – CALABARZON Region Campus, and 3) Ramon Teves Pastor Memorial – Dumaguete Science High School. Their projects aimed to address important community issues by providing innovative solutions, such as promoting high-quality eye care, monitoring and preserving the Philippine Eagle, and providing medical assistance in remote geographically-isolated areas.

The projects were evaluated by a panel of experts, composed of UP Electrical and Electronics Engineering Institute Professor Engr. Percival Magpantay, Ateneo de Manila University Professor Engr. Carlos Matti Oppus, and University of Sto. Thomas Professor Engr. Edison Roxas who assessed them according to their viability and potential to impact the community.

Meanwhile, three outstanding students, namely, Alexander A. Bañados and Amina M. Javellana of the PSHS CALABARZON Region Campus and John Raymond P. Enolpe of Ramon Teves Pastor Memorial-Dumaguete Science High School, were awarded with the Young Scientist Award (YSA) by DOST-SEI's partner, the Gokongwei Brothers Foundation (GBF). They were also granted with the STEM Scholarship for Exellence, allowing them to pursue a STEM course of their choice at any university or college in the country.

Overall, the 5th imake.wemake was a resounding success, fostering the potential of the next generation of scientists and innovators to create and invent their future.

6TH INDIE-SIYENSYA FILMMAKING COMPETITION: HIGHLIGHTING CLIMATE ACTION

The 6th Indie-Siyensya Filmmaking Competition, which was launched on the 26th of August 2022, was a huge success, just like its previous cycles. The competition was divided into two (2) categories: a) the Youth Category, which is open to participants aged 13-18, and b) the Open Category, which is open for those 19 years old and above.

The participants were tasked to creatively and visually interpret the causes and effects of climate change, guided by the theme *"Communicating Climate Change"* for the Youth Category and *"Communicating Climate Change Action"* for the Open Category. Coming from a variety of perspectives, including scientific, social, political, economic, and cultural, the filmmakers were able to produce powerful documentaries and science explainers that demonstrate the importance of taking action to address the effects of global warming.

The competition received 267 entries, with 72 in the Open Category and 195 in the Youth Category, evaluated by a Board of Judges and Technical Working Group. The judges included esteemed professionals from the academe, science communication, advocacy filmmaking, science education, and content production, namely, Prof. Garry Jay Montemayor, Prof. Seymour Barros Sanchez, Prof. Patrick Campos, Dr. Aimee Lyn Dupo, Mr. Peter Jeffrey Maloles, Ms. Marcela Claudete Sevilla, and Ms. Rica Arevalo.

Members of the BOJ and TWG during the judging and deliberation of film entries.

In partnership with the Film Development Council of the Philippines (FDCP), an on-site film festival was conducted at the Cinematheque Centres in Manila, Nabunturan, Davao, and Negros from January 21 to 22, 2023 and at Cinematheque Centre Iloilo from January 26 to 27 to showcase the film entries of the Finalists to the public. Likewise, online viewers got the chance to screen the films through FDCP's Online Channel, JuanFlix, from January 28 to February 5, 2023.

Students and Filmmakers during the Indie-Siyensya film screening in Cinematheque Center Manila

The awarding ceremony was held on February 25, 2023 at the Philippine International Convention Center (PICC) and was graced by DOST Secretary Dr. Renato U. Solidum, Jr., who emphasized the importance of science communication in national development, anchored in research that is impactful, useful, and relevant to society. Together with DOST-SEI Director, Dr. Josette T. Biyo and FDCP representatives, Dr. Solidum awarded the winning filmmakers per category:

OPEN CATEGORY

1. **Best Film:** ***"K5: KATUTUBONG KAHOY KONTRA KRISIS SA KLIMA",*** a mini-documentary film that shows how planting native trees, while limited, is an important nature-based solution for mitigating the climate crisis.

2. **2nd Best Film:** ***"CLIMACTS"*** a documentary film by Kyle Carlo Lasala De La Salle, highlighting root cause and drastic effects of climate change. It features the existing and developing actions with emphasis on systemic change.

3. **3rd Best Film:** ***"MARKA NG PAWIKAN"*** directed by Humphrey Mark Gian Francesco Torcuator, a captivating film which shows how climate change directly affects pawikan's brooding and survival, causing detrimental effects to their species.

YOUTH CATEGORY:

1. **Best Film:** ***"TANAW JUAN"*** is an interactive, engaging film by Yashmen A. Gerez of Quezon Science High School. The film follows the story of Juan who goes through his normal daily routine and casually explains scientific concepts and phenomena surrounding climate change.

2. **2nd Best Film:** ***"MARVELS OF SCIENCE: CLIMATE CHANGE"*** by Sophia and Felizia Shayn of De La Salle University and Marcelo H. del Pilar. The film explains the global impact of climate change on life, and the environment.

3. **3rd Best Film:** ***"SIRAK"*** by Charles Josua Uy of the PSHS – Eastern Visayas. SIRAK, also known

as sunny in Waray, explains climate change through the greatest common denominator, heat.

The winning films were selected based on scientific content, idea execution, and filmmaking technique. The winners of each category received trophies, certificates, and cash prizes worth Php 100,000 for the Best Film, Php 50,000.00 for 2nd Best Film, and Php 30,000 for the 3rd Best Film. The film entries *"Tanaw Juan"* and *"Climacts"* received the Viewer's Choice Award and a cash prize amounting to Php 20,000.

Winners of the 6th Indie-Siyenya Filmmaking Competition with DOST Secretary Sec. Renato Solidum, SEI Director Dr. Josette T. Biyo, Supervising SRS and OIC STMERPD Dr. Randolf S. Sasota, FDCP Executive Director Mr. David Morales and Representatives Mr. Sed Arce, Ms. Gaby Velasco, and Ms. Jen Tores, together with the TWG and BOJ of the competition.

Tanaw Juan by Yashmen Gerez and Climacts by Kyle Carlo Lasala win Viewer's Choice Award in the 6th Indie-Siyensya Filmmaking Competition

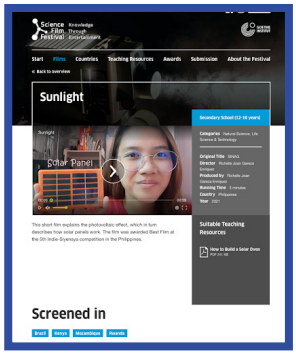
Winners of the Best Film for both categories of the 6th Indie-Siyensya Filmmaking Competition are "Tanaw Juan" and "Climacts".

6th Indie-Siyensya Filmmaking Competition winners of 2nd Best Film receive their awards.

3rd Best film of both categories of the 6th Indie-Siyensya Filmmaking Competition pose for a photo opportunity on stage.

2022 SCIENCE FILM FESTIVAL TO SCREEN AWARD-WINNING INDIE SCIENCE FILMS

The Goethe Institute organized the 2022 Science Film Festival, which has been supported by the DOST-SEI for 13 consecutive years. The 5th Indie-Siyensya winning films *"Sinag"* and *"Yankaw"* were included in the official selection of the year's SFF. *"Yankaw,"* a documentary by Khristine L. Sandoval of the National University (NU) Sports Academy, which investigated a sustainable traditional Filipino fishing practice, was recognized as the most voted film, getting the top spot at the 2022 SFF.



Publication Material Highlights from Goethe Institute's 2022 Science Film Festival

TAGISANG ROBOTICS COMPETITION 3.0: GIRLS AND GEARS

Girls on spotlight

In 2021, the DOST-SEI published a study entitled *"Women in Science Fact Sheet No.4",* which concluded that there is a scarcity in the number of women in the field of Science and Technology. The findings of this study showed that most female S&T workers have largely occupied the medical industry and discipline. Numerically, only about 15.1% and 20.8% of S&T workers in engineering and architecture, respectively, were women.

Hence, aiming to help close the gender gap of S&T workers in the country and encourage more women to be interested in the field of ICT, mainly in robotics and programming, the Department of Science and Technology-Science Education Institute (DOST-SEI) has converted one of its decade-long running programs, the Tagisang Robotics Competition, to an all-girls competition dubbed *"Tagisang Robotics Competition: Girls and Gears."* The competition focuses on exposing female students to the field of robotics, and its potential applications in various industries and careers. It also aims to develop students' critical thinking, problem solving, and collaboration skills through hands-on experience in building and programming mobots. Ultimately, the TRC: Girls and Gears intends to set ground to the students' successful science and technology journey in the future.

Also, as part of the bid to entice more learners in the field of robotics, the DOST-SEI aims to use the TRC: Girls and Gears as the official selection platform for the World Robot Olympiad – Future Engineers Category, which focuses on engineering processes to build seamless robots and empowers students to freely use any tool or platform to build their vehicles.

With all of these in mind, the TRC: Girls and Gears games which would be a score-and-time based challenge, would focus on the use of the Arduino-based microcontroller platform embedded and connected with sensors and motors to create an autonomous vehicle that could self-correct, detect colors, and move around a grid-designed playing field. But before the games, the participating school-teams would be enrolled to a five-day technical training and workshop, which is to be conducted face-to-face.

Each school team that would register should be composed of four (4) all-female students with one (1) teacher to act as a school coach. Registration would start on February 2023 while the training would be done on March 2023. The games would run through from June 2023 and would conclude to the Final Competition on July of the same year.

Former STMERP Division Head, Dr. Ruby Cristobal, together with the members of the Board of Judges posed for a photo oppotunity during the awarding ceremony of the previous year's Tagisang Robotics Competition

A mobot produced/created by one of the school-teams using the provided kit of parts.

A snap of the trophies awarded during the previous year's Tagisang Robotics Competition.

One of the school teams' mobot moving around the TRC's playing field.

PINOY STUDENTS SHINE IN LEGACY SCIENCE OLYMPIADS

The country's winning ways at the world cup of mathematics continues as the Philippine delegates of the different Olympiads tops to the various competitions.

Philippine Math Olympiad

A perfect score seals the deal in the 24th Philippine Mathematical Olympiad (PMO).

Raphael Dylan T. Dalida of the Philippine Science High School – Main Campus, a veteran and a two-time medalist at the International Mathematical Olympiad (IMO), topped over two dozen finalists in this year's PMO with a perfect score, a rare feat in the national competition.

Dalida previously won a silver medal in last year's IMO, and a bronze in the year prior.

Joining him in the podium are Filbert Ephraim S. Wu of Victory Christian International School who placed second, and Jerome Austin N. Te of Jubilee Christian Academy who settled for third.

Wu was coached by his brother, Farrell Eldrian, who won the country's first ever gold medal at the IMO in 2016, while Te is an up-and-coming prodigy.

With the win, Dalida, Wu, and Te bagged P25,000, P20,000, and P15,000 cash prizes, respectively, along with trophies, certificates, and cash prizes for their coaches.
The PMO is organized by the Mathematical Society of the Philippines (MSP) with support from the Department of Science and Technology – Science Education Institute (DOST-SEI). Students from all over the country showcased their mathematical prowess in a virtual setup from March 19-20, 2022.

Mathematical Olympiad Summer Camp was later conducted to determine the six national bets for the International Math Olympiad (IMO).

International Math Olympiad

The country's winning ways at the world cup of mathematics continues.

Six (6) Filipino students took home two bronze medals and four honorable mentions at the 63rd International Mathematical Olympiad, which was held in-person for the first time after two years.

IMO first-timer Mohammad Nur Casib of the Philippine Science High School-Central Mindanao and two-time IMO medalist Raphael Dylan Dalida of the Philippine Science High School (PSHS)-Main Campus led the way for the Philippines, snatching two bronzes after scoring 24 and 23 points, respectively.

Sarji Elijah Bona of the De La Salle University Senior High School, who won a bronze medal last year, received an honorable mention this time along with Rickson Caleb Tan of MGC New Life Christian Academy, Filbert Ephraim Wu of Victory Christian International School and Enrico Rolando Martinez of the PSHS-Main Campus.

A total of 589 contestants from 104 countries participated in the 63rd IMO held in Oslo, Norway, which finally snapped the two years of conducting the competition online due to the COVID-19 pandemic.

The Philippines ranked 55th out of all the participating countries. Since joining the IMO in 1988, the country has won a total of four gold medals, 16 silver medals, 37 bronze medals and 30 honorable mentions.

This year, 44 gold medals, 101 silver medals, 140 bronze medals, and 210 honorable mentions were awarded.

National Olympiad in Informatics – Philippines

Familiar names dominated yet again in the 2022 National Olympiad in Informatics – Philippines (NOI.PH).

After nabbing bronze in the 33rd International Olympiad in Informatics (IOI) held last year in Singapore, Raphael Dylan T. Dalida of the Philippine Science High School – Main Campus looks to get another chance for the gold as he topped the national event, besting 29 finalists in the online NOI.PH last April 23-24.

Dalida finished with an impressive 699.23 points. Securing the second spot and receiving a silver medal is fellow IOI veteran Frederick Ivan Michael Tan of Philippine Science High School – Main with 510 points. Just like Dalida, he won a bronze medal in last year's IOI.

Another silver medalist is Filbert Ephraim Wu of Victory Christian International School who came in third with 412 points. With the win, Dalida, Tan, and Wu received P6,000, P3,000, and P3,000 cash prizes, respectively, along with medals and certificates.

The NOI.PH Finals was participated in by the top 29 contestants that emerged from the eliminations. They each solved four challenging programming tasks in

each day's five-hour session. Contestants used their programming, coding and analytical skills to create data structures and algorithms to solve each task using a program.

Also securing places in the top 10 were:

Place	Name	Points
4th place	Cassidy Kyler Tan of Ateneo de Manila Senior High School	391 points
5th place	Shawn Darren Chua of MGC New Life Christian Academy	380.84 points
6th place	John Lloyd Allas of City of San Jose Del Monte National Science High School	350 points
7th place	Enrico Rolando Martinez of Philippine Science High School Main	296 points
7th place	Kian Colin Chua of Saint Jude Catholic School	296 points
9th place	Joaquin Iñigo Castillejos of Valenzuela City School of Mathematics and Science	271.97 points
10th place	Tristan Gabriel Cabinta of Philippine Science High School – CAR	268 points

Other International Competitions

International competitions in basic sciences prove to be constant witnesses to Filipino youth prowess. In July, three Philippine teams took the world stage and netted a total of six bronze medals, two honorable mentions, and a merit citation in the recently concluded international biology, chemistry and physics Olympiads.

Winning three bronze medals and a merit citation were the delegates to the 33rd International Biology Olympiad (IBO), which was held in Yerevan, Armenia last July 10-18. Chiara Bernadette Z. Tan-Gatue from Saint Jude Catholic School, Raven Glorianne H. Foronda from the Philippine Science High School (PSHS) Main and Yosef Alexander O. Segotier from PSHS – Western Visayas all won bronze medals, while Liam Audrey A. Alleda from PSHS – Calabarzon received a merit citation. This is the biggest haul of medals for the country since joining the IBO in 2018.

Adding to the tally were Aames Juriel B. Morales from the De La Salle University Senior High School and Ron Angelo A. Gelacio from PSHS – Main who both won bronze medals in the 54th International Chemistry Olympiad (IChO) held in Tianjin, China last July 10-18. Their teammates, Anne Maricar T. Maralit from PSHS – Main and Lemuel A. Acosta from PSHS – Central Luzon, likewise secured honorable mentions to cap the event.

Meanwhile, PSHS – Main's Franco Mari Cabral and Harold Scott Chua brought home a bronze medal and an honorable mention in the 52nd International Physics Olympiad (IPhO), which was held online last July 10-17. Gabriel Angelo Vila from PSHS – Calabarzon completed the national team to the IPhO, which was originally planned to be held in-person in Belarus before organizers opted to conduct the competition online after more than 65 percent of the participating countries voted in favor of the virtual mode.

YOUTH EXCELLENCE IN SCIENCE (YES) AWARD

The Youth Excellence in Science (YES) Award acknowledges the outstanding accomplishments of young individuals in the domains of science and mathematics. This recognition, granted by the Department of Science and Technology (DOST), is bestowed upon Filipino students who achieve gold, silver, or bronze medals in international science and mathematics competitions, either as individuals or as part of a team. These recipients are regarded as valuable contributors to DOST's pursuit of excellence and are honored as esteemed young scientists in their ranks.

According to DOST-SEI, the Philippines continues to gain recognition internationally, with students from different regions of the country securing a total of 5,060 gold, silver, and bronze medals in 2021. This achievement was showcased during the virtual awarding ceremony for the Youth Excellence in Science (YES) awards organized by DOST-SEI.

As part of the activities commemorating the 2022 National Science and Technology Week, DOST-SEI presented 1,802 YES medals to elementary and high school students who have excelled in international science, technology, engineering, and mathematics (STEM) competitions, either as individuals or as part of a group. The awardees, hailed from various regions across the country.

SECTION

05

EXCELLENCE EMBODIED: INSTITUTIONAL COMPLIANCE AND RECOGNITION

HRMU ACCOMPLISHMENTS

Awarding of PRIME-HRM Bronze Award

Following the success of the virtual audit last June 30 to July 01, 2021, the Civil Service Commission (CSC) conferred the DOST-Science Education Institute (SEI) with the Program to Institutionalize Meritocracy and Excellence in Human Resource Management (PRIME-HRM) Bronze Award.

The CSC's PRIME-HRM focuses on the implementation of a standardized system that will improve and enhance the HRM competencies and practices toward excellence. As a PRIME-HRM Bronze Awardee, the HRMU has reached a process-defined standing in which existing standard operating procedures were defined and documented.

The initial awarding was held on January 31, 2022, at the WGP Conference Hall of the DOST-SEI. The award with CSC Resolution No. 2101033 was personally delivered by Dir. Margarita Reyes, Director of the CSC-DOST Field Office, and was received by SEI Director, Dr. Josette T. Biyo, SEI Deputy Director, Engr. Albert G. Mariño, Division Chiefs of the Institute, and the HRMU Officer and staff.

Dir. Margarita Reyes of CSC-DOST Field Office Director presented the resolution to the SEI management.

Dir. Reyes (center) with HRMU Unit Head, Ms. Joana Teresa Medina (front-right) and the HRMU staff

The awarding ceremony was held on June 08, 2022, at the CSC-NCR and personally attended by Dr. Josette T. Biyo, and Engr. Albert G. Mariño to receive the plaque award.

(From left to right) Engr. Albert Mariño and Dr. Josette Biyo accepting the plaque for PRIME-HRM Maturity Level II- Bronze Award together with the CSC officials.

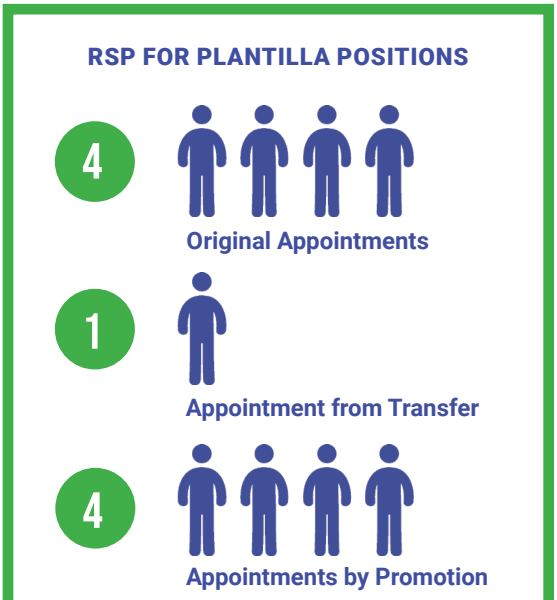


Figure 22: Number of newly hired personnel with plantilla positions

Recruitment, Selection, and Placement

As of November 2022, the DOST-SEI has a total number of 52 personnel with a plantilla position and a total number of 95 assigned personnel. Moreover, two (2) personnel have retired as of October 2022.

The HRMU successfully processed the appointment and promotion of nine (9) personnel for the plantilla position for the year 2022.

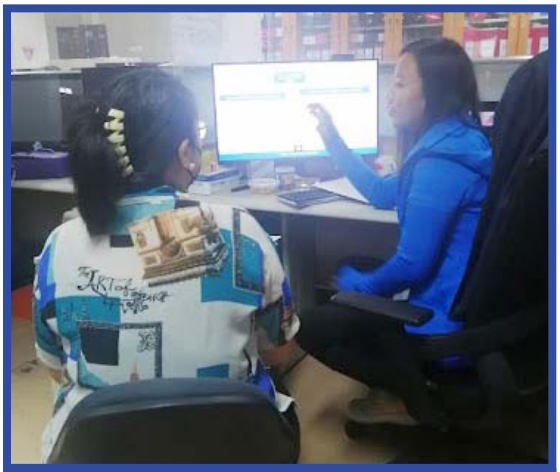
The Unit was also able to assist in the processing and facilitation of hiring of the additional 15 assigned personnel.

Immersion Activity as part of the Onboarding Program

Following the appointments of four (4) personnel for the plantilla position, they underwent an Immersion Activity as part of the HRMU Onboarding Program. In this activity, the personnel were given an opportunity to engage themselves in the day-to-day activities of the different divisions and units of the Institute. They were given an assigned buddy from every division who helped and assisted them during the immersion activity. Through the Onboarding program, the employees were able to recognize and appreciate the importance of various functions of other divisions and units.

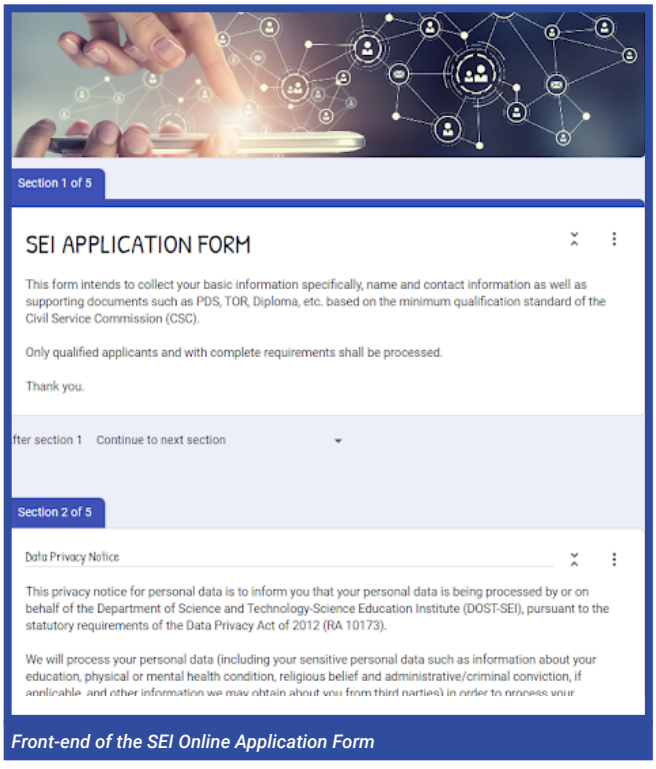
The activity was well-received by the employees who gave their commendable feedback as can be seen in some of their statements below:

- This Onboarding program is a great step to a more efficient and productive delivery of service as it allows new employees to acquire knowledge on the functions and processes of the different division/unit of SEI;
- This Onboarding assessment for new employee was more beneficial to everyone to have quality work performance. In this way, trainee and the assigned buddy shared their thoughts and learned from one another;
- Thank you very much for this opportunity. This activity helps in building connections between new hires/promoted people and SEI's other units;
- This is a good start for the way forward of HRMU and SEI in excellent service.



Ms. Nerissa Nicolas, the assigned buddy, discusses the STSD processes to Ms. Jasmin Intia during the conduct of the Onboarding Program.

Mr. Michael Telesforo and Ms. Liezl de Lara (assigned buddy) during the Immersion Activity.



Front-end of the SEI Online Application Form

Creation of Online Application Form

To mitigate the rampant spread of the COVID-19 virus without discontinuing the processes for recruitment, selection, and placement, the HRMU created the online application form for the plantilla positions. With this, applicants were able to submit their applications while being in their own safe places to ensure their safety from the virus.

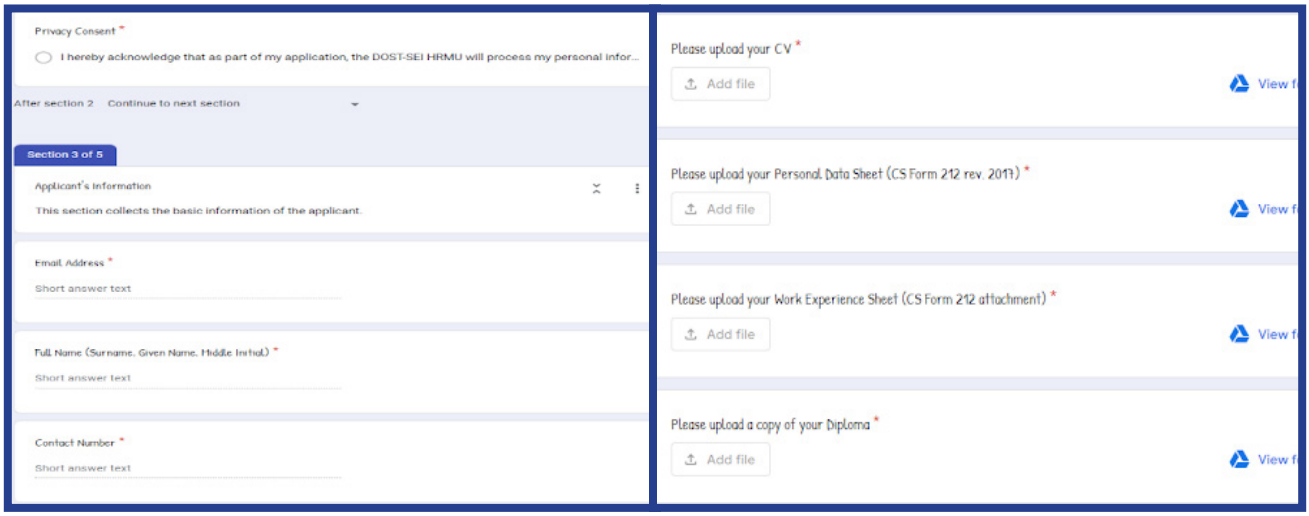


Table 47: Total number of trainings conducted and facilitated

Types of L&D	Number of L&Ds Conducted/Facilitated
In-house Trainings/L&DI	9
External Trainigns/L&DI	13

Table 48: Total number of training benefeciaries

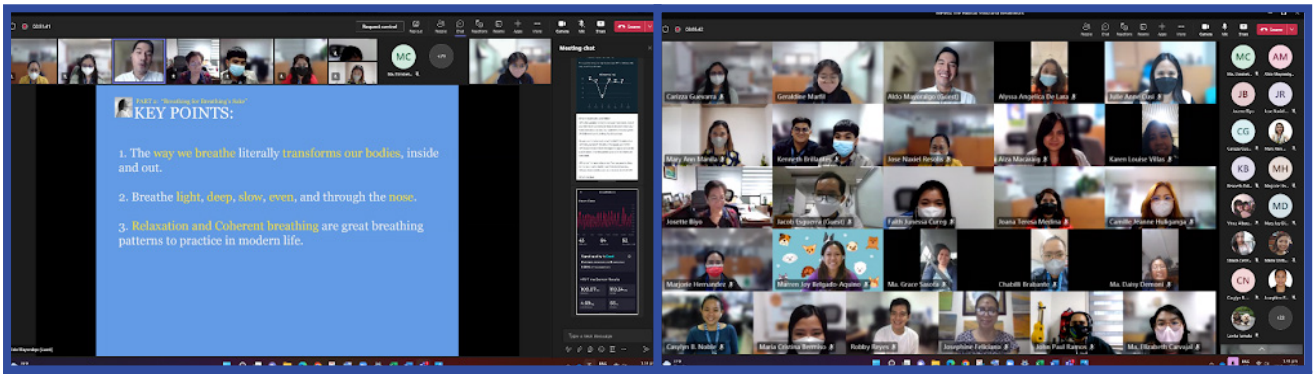
Number of Beneficiaries	
Permanent Personnel	45
Assigned Personnel	39

Learning and Development

Despite the ongoing pandemic that is still currently prevalent, HRMU continues to support the employees and assigned personnel with their personal and professional growth. A total of 22 trainings, both in-house and external were conducted and facilitated for the year 2022. Trainings were organized in a form of virtual and face-to-face.

Forty-five (45) permanent personnel and 39 assigned personnel benefitted from the trainings organized by the HRMU.

SEI employees during the onsite Basic Writing Skills Training with Mr. Philip Bue (center), FAD Chief and Dr. Shiela Viesca (right), resource speaker from the TalkShop



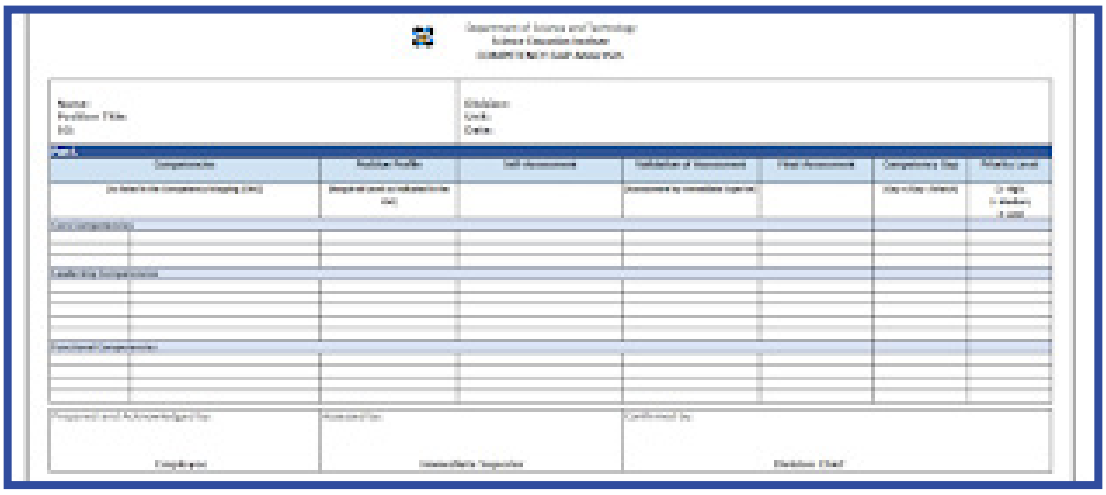
The webinar entitled "How to Quiet Your Mind: A Guide for Modern Humans- The Habitat Mind and Breathwork" was attended by the SEI employees via MS Teams

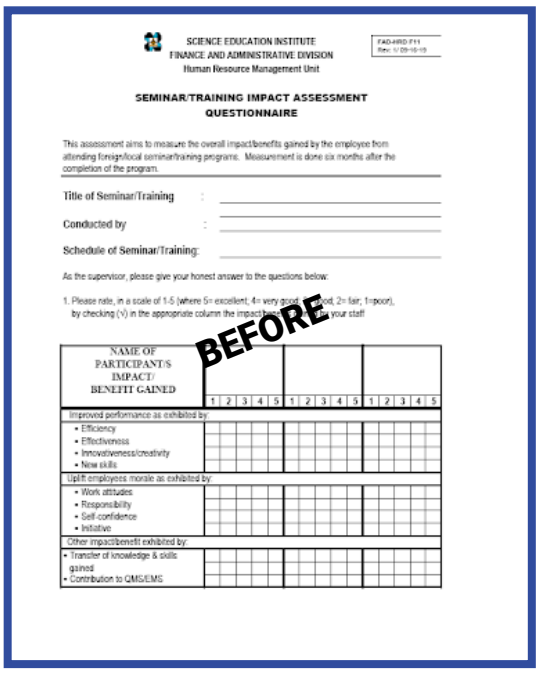
Table 49: List of trainings conducted and facilitated for the year 2022 and total number of beneficiaries.

Training/Seminar/Workshop	No. of Beneficiaries		TOTAL
	Permanent	COS	
1. Seminar-Workshop on Competency-Based Selection	12	0	12
2. 2nd Government Internal Auditors Summit	1	0	1
3. Project Management	1	0	1
4. Public Speaking	2	0	2
5. Appreciation course on PRIME-HRM Maturity Level III	30	4	34
6. Forum on Program to Institutionalize Meritocracy and Excellence in Human Resource Management (PRIME-HRM)	2	0	2
7. Online Training on Effective Business Communication	1	0	1
8. Seminar-Workshop on Energy Management System (EMS) Technology Operation and Maintenance	1	0	1
9. Online Learning Session on Foundation Track under the Public Financial Management Competency Program	1	0	1
10. Comprehensive Course in Mediation	1	0	1
11. Online Training on Exceptional Customer Service	1	0	1
12. Mental Health and Wellness Webinar Series 1: How to Quiet Your Mind: A Guide for Modern Humans-The Habitat Mind and Breathwork	14	24	38
13. 2022 Annual National Convention cum Seminar	4	0	4
14. ISO 13000 Risk Manager Online Training Course	11	1	12
15. 2022 Public Sector HR Symposium	1	0	1
16. Business Writing Workshop	7	8	15
17. Training-Workshop on Statistical Analysis using Python	2	0	2
18. Mental Health and Wellness Webinar Series 1: How to Quiet Your Mind: A Guide for Modern Humans-Mindwork and Meditation	17	33	50
19. Basic Technical Writing Skills (Technical Writing 101: Writing Reports and Project Proposal)	11	4	15
20. Presentation Skills	11	9	20
21. Facilitation Skills	11	7	18
22. Training-Workshop on Communicating the Science Behind Numbers with a Sexy Twist	1	0	1

Integration of Competency- Based Human Resource System in L&D System

As part of the continuous integration of the Competency-Based Human Resource System in the HR processes, the HRMU implemented the Competency Gap Analysis (CGA) as a tool in identifying the competency gaps of employees. Aside from the comments and recommendations from the Individual Performance Commitment and Review (IPCR) of employees and the result from the Human Resource Development Program (HRDP) Survey, the accomplished CGA will be a great help in crafting the HRD Plan of the Institute. This will contribute to recognize the learning and development interventions that will develop and bridge the specific gap of employees' performance and competencies.

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FINANCE AND ADMINISTRATIVE DIVISION
Human Resource Management Unit

SEMINAR/TRAINING IMPACT ASSESSMENT QUESTIONNAIRE

This assessment aims to measure the overall impact/benefits gained by the employee from attending foreign/local seminar/training programs. Measurement is done six months after the completion of the program.

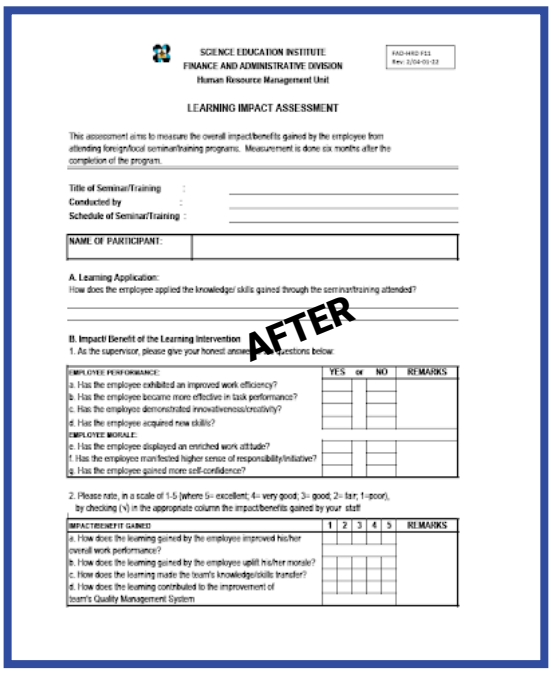
Title of Seminar/Training :
Conducted by :
Schedule of Seminar/Training:

As the supervisor, please give your honest answer to the questions below:

1. Please rate, in a scale of 1-5 (where 5= excellent; 4= very good; 3= good; 2= fair; 1=poor), by checking (√) in the appropriate column the impact/benefits gained by your staff

BEFORE

NAME OF PARTICIPANT'S IMPACT/ BENEFIT GAINED														
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Improved performance as exhibited by:															
• Efficiency • Effectiveness • Innovativeness/creativity • New skills															
Uplift employees morale as exhibited by:															
• Work attitudes • Responsibility • Self-confidence • Initiative															
Other impact/benefit exhibited by:															
• Transfer of knowledge & skills gained • Contribution to QMS/EMS															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Human Resource Management Unit

LEARNING IMPACT ASSESSMENT

This assessment aims to measure the overall impact/benefits gained by the employee from attending foreign/local seminar/training programs. Measurement is done six months after the completion of the program.

Title of Seminar/Training :
Conducted by :
Schedule of Seminar/Training :

NAME OF PARTICIPANT:	

A. Learning Application:
How does the employee applied the knowledge/ skills gained through the seminar/training attended?

B. Impact/ Benefit of the Learning Intervention
1. As the supervisor, please give your honest answers to the questions below:

AFTER

EMPLOYEE PERFORMANCE:	YES	or	NO	REMARKS
a. Has the employee exhibited an improved work efficiency?				
b. Has the employee became more effective in task performance?				
c. Has the employee demonstrated innovativeness/creativity?				
d. Has the employee acquired new skills?				
EMPLOYEE MORALE:				
e. Has the employee displayed an enriched work attitude?				
f. Has the employee manifested higher sense of responsibility/initiative?				
g. Has the employee gained more self-confidence?				

2. Please rate, in a scale of 1-5 (where 5= excellent; 4= very good; 3= good; 2= fair; 1=poor), by checking (√) in the appropriate column the impact/benefits gained by your staff

IMPACT/BENEFIT GAINED	1	2	3	4	5	REMARKS
a. How does the learning gained by the employee improved his/her overall work performance?						
b. How does the learning gained by the employee uplift his/her morale?						
c. How does the learning made the team's knowledge/skills transfer?						
d. How does the learning contributed to the improvement of team's Quality Management System						

The before and after version of the Learning Impact Assessment Questionnaire

Improved Implementation of Learning Impact Assessment

For accurate and detailed measurement of learnings acquired by the employees from trainings, the Learning Impact Assessment Questionnaire was upgraded by revising the items into more specific questions.

The Learning Impact Assessment Questionnaire is administered six (6) months after the attended training and is accomplished by the trainee's immediate supervisor.

Successfully Conducted the HRMU Planning Workshop and Produced the PRIME-HRM Action Plan for Maturity Level III

After the success in achieving the Maturity Level II- Bronze Award for PRIME-HRM, the HRMU held their planning workshop last October 5-7, 2022, at Estancia de Lorenzo, San Mateo Rizal in preparation for PRIME-HRM Maturity Level III.

The HRMU, with the assistance of Mr. Philip J. Bue, Administrative Chief of the Finance and Administrative Division (FAD), successfully came up with an action plan that involves the identification of evidence requirements and other necessary preparation as required for PRIME-HRM Maturity Level III.

The HRMU staff, as well as Mr. Philip Bue, participated in the activity during the Planning-Workshop.

HRMU Unit Head, Ms. Joana Teresa Medina (right) and staff with Mr. Philip Bue (center) during the HRMU Planning-Workshop in preparation for the Maturity Level III of PRIME-HRM.

Creation of Online Requisition Form for Personnel Records

To act on the request of the employees efficiently and appropriately, the HRMU fully administered the online requisition form for personnel records. The creation of the online requisition enables the employees to request their personnel records without personally going to the unit's office. This was also conducted due to the surge of the COVID-19 pandemic to minimize face-to-face interaction.

The SEI Biometrics that is being used for the time-in and time-out of the employees.

Full Implementation of Facial Recognition for Biometrics

In partnership with the Management Information System Unit (MISU) and Building Maintenance Section (BMS) of DOST-SEI, the HRMU was able to fully integrate the use of facial recognition for Biometrics for the time-in and time-out of the employees.

The complete integration of facial recognition for biometrics made the timekeeping system of the Institute systemized and efficient. It also helped in alleviating the transmission of the COVID-19 virus considering that the use of fingerprints has been replaced by facial and ID recognition.

IMPROVEMENT OF SEI'S OFFICES & FACILITIES 2022

- Outsourcing of Service Maintenance of Air Conditioning Units (Next PM 3-11 Dec 2022)
- General Pest Control Treatment
  (Next GPC 29 or 30 October 2022)
- Provision of Parking Areas for Bicycles and Motorcycles (Completed 18 July 2022)
- Additional Closed-Circuit Television (Completed 11 August 2022)
- Provision of Driver's Shed and Smoking Area (Completed 17 September 2022)
- Improvement of SEI's Existing Indoor and
  Outdoor Spaces
  - Supply and Installation of Receiving Windows (Completed 02 September 2022)
- November 4, 2022
  - Repair and Renovation of Comfort Rooms of SEI's Executive
    Offices (Target Completion 2022 December)

Additional closed-circuit television

Outsourcing of service maintenance of air conditioning units.

OD & ODD Offices

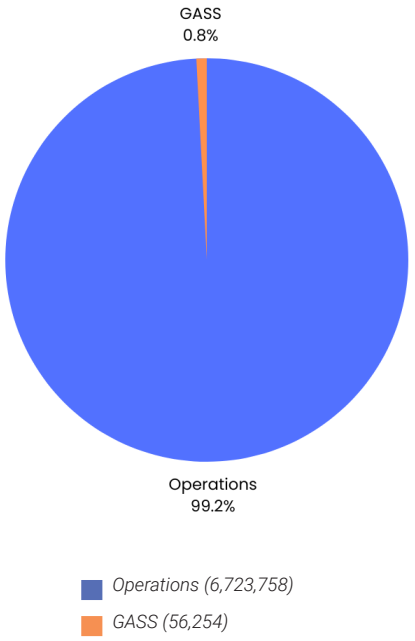
Driver's shed and parking area

MANAGING RESOURCES (SAOB AND BUDGET DISTRIBUTION)

(Amount in Thousand Pesos)

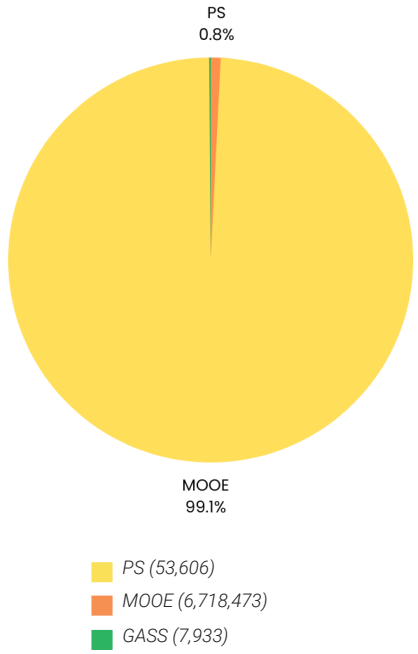
ACTUAL EXPENDITURE (FY 2021)

Figure 19



PER MAJOR EXPENSE AND MAJOR FINAL OUTPUT

Figure 20



PAPS	PS		MOOE		CO		Total		% Utilization
	Allotment	Obligation	Allotment	Obligation	Allotment	Obligation	Allotment	Obligation	
General Administration and Support Services (GASS)	28,610	28,604	25,259	19,717	8,063	7,933	61,932	56,254	90.83%
	28,610	28,604	25,259	19,717	8,063	7,933	61,932	56,254	90.83%
OPERATIONS									
Development and Administration of S&T Scholarship Programs, Awards and Grants for Graduate Level	4,725	4,725	2,778,007	2,613,656	-	-	2,782,732	2,618,381	94.09%
Development and Administration of S&T Scholarship Programs, Awards and Grants for Undergraduate Level	4,593	4,593	4,086,557	4,041,472	-	-	4,091,150	4,046,065	98.90%
S&T Education Development Program Research, Promotion and Dev. of S&T Education & Training	15,684	15,684	58,131	42,420	-	-	73,815	58,104	78.72%
Support to the Presidential Committee implementing PD 997			1,489	1,208	-	-	1,489	1,208	81.13%
	25,002	25,002	6,924,184	6,698,756	-	-	6,949,186	6,723,758	96.76%
Total Budget	53,612	53,606	6,949,443	6,718,473	8,063	7,933	7,011,118	6,780,012	96.70%

TRANSCENDING EXCELLENCE FOR A TRANSFORMATIVE AND MEANINGFUL INITIATIVES

In the dynamic landscape of the Department of Science and Technology - Science Education Institute (DOST-SEI), excellence stands as the central direction of the institute's multi-faceted programs and activities.

To better serve the Institute's internal and external stakeholders and clienteles, the DOST-SEI continued to improve its delivery of services by developing the Project Management Information System (PMIS) which was being spearheaded by the Office of the Director-Planning Unit.

The system when finished, will also serve as the backbone for monitoring the status of numerous programs, projects, and activities of the agency. With the capacity to store, edit, and retrieve information on scholarship programs, teacher trainings, S&T promotion activities, youth programs, innovative programs in science and mathematics education, and researches on human resource development, PMIS will transforms data into actionable insights.

In 2022, the PMIS was pilot tested during the DOST-SEI Operational Planning-Workshop where it has showcased its immense potential. The module on Budget Execution Documents (BED) streamlined the encoding process for SEI divisions. By empowering divisions to encode critical data, such as Project Budgetary Requirements for Fiscal Year 2023 - 2028; Physical Targets; and Project Monthly Implementation, PMIS emerges as a catalyst for informed decision-making and coordinated efforts across the Institute.
In addition, the conduct of annual DOST-SEI Operational Planning Workshop serves as cornerstone event that brings together and strengthens the teamwork in the Institute. Held from November 16-18, 2022 at Crimson Hotel, Alabang, Muntinlupa City, this workshop served as a forum where divisions shared their achievements, challenges, and insights from the fiscal year 2022. Also, this activity precisely conveys the organization's direction through its vision and mission statements into a future-proof identity that is contributory to emerging technologies and developments in both national and global science and technology sector.

Finally, the efforts mentioned above would not be made possible without the meticulous crafting of the Fiscal Year 2023 budget and the 3-year forward estimates, in compliance with the standards set by the Department of Budget and Management (DBM), reflects the Institute's dedication to financial prudence.

Every division's effort plays a pivotal role in making sure that documentary requirements are submitted on time, the active participation of the agency in budget hearings and oversight meetings also guarantees that the financial initiatives are communicated transparently and align with regulatory expectations of various oversight agencies like the Department of Budget and Management, House of Representatives, and Senate of the Philippines.

INSTITUTIONALIZING GENDER AND DEVELOPMENT

2022 National Women's Month Celebration

Dr. Biyo opening message for Women's Month

DOST-SEI National Women's Month Celebration Kick-Off

Last March 7, 2022 the Department of Science and Technology–Science Education Institute welcomed the March-long celebration of National Women's Month through a kick-off ceremony via Zoom which was attended by more than 100 DOST-SEI employees and assigned personnel. With the theme *"We Make Change Work for Women: Agenda ng Kababaihan, Tungo sa Kaunlaran."*

The kick-off ceremony was joined by more than a hundred employees who actively participated and witnessed the activities planned by the DOST-SEI's Gender and Development (GAD) Focal Point System.

March 8: Women in STEM Feature "Juana Says" on SEI-GAD official Facebook page

Celebrating International Women's Day

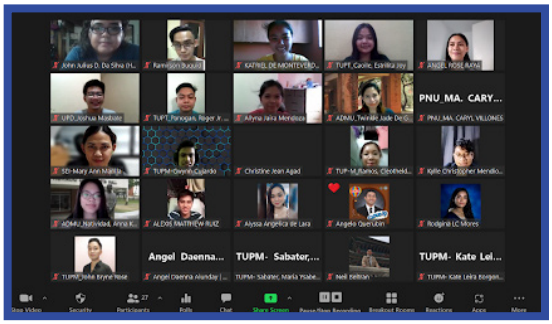
Women in STEM and advocates from the DOST-SEI Gender and Development Technical Working Group shared their inspiring messages during the celebration of International Women's Day on March 8, 2022. Their messages were posted on GAD's official Facebook page that reached more than 200 audience for the whole Women in STEM series.

Women in STEM Advocates:

- Ms. Janice M. Baldelovar, 2020 Brightest STAR for Mathematics Awardee
- Atty. Carolina G. Lim-Gamban, MSc, LPT (former Prof CPT Carolina G Lim)
- Dr. Aimee Lynn Dupo, Professor, Institute of Biological Science, UPLB

GAD's Technical Working Group advocates:

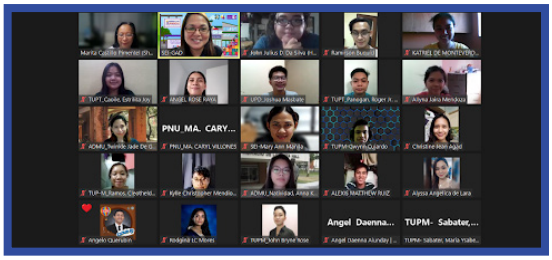
- Ms. Liezl De Lara
- Ms. Jemmalyn Miniao
- Ms. Susana Esquivel
- Ms. Jobelle Gayas
- Ms. Joana Teresa Medina
- Ms. Mary Ann Manila
- Ms. Marren Joy Belgado-Aquino
- Ms. Maria Elena Agbuis



Webinar with Scholars: Discussion with DOST-SEI Undergraduate Scholars on Republic Act 9710 (Magna Carta of Women)

More than 20 DOST-SEI undergraduate scholars joined the webinar discussion with Ms. Marita Castillo Pimentel last March 25, 2022. Ms. Pimentel shared an insightful talk on Republic Act 9710 or the Magna Carta of Women.

She further explained the importance of equal access for all genders. The elimination of discrimination against women can also be done thru giving them access and opportunity to learn and pursue a professional career of their choice. Scholarships and trainings were also discussed as one of the tools for many women to reach their full potential, without discrimination to educational access.



Webinar-Forum: Gender Sensitive Customer/Client Relations and Service and Program

Ms. Marita Castillo Pimentel gave a very comprehensive and eye-opening discussion on Gender Sensitive Customer/ Client Relations Service and Program during DOST-SEI's.

Webinar-Forum last March 28, 2022. With over 60 participants via Zoom, the discussion centered on gender responsive public services, which emphasized the importance of gender fair languages and images in society.

Changes in the English language was one of the examples set by Ms. Pimentel that adapted the gender fair language with the exclusion of gender terms in professional titles.

DOST-SEI Leading Ladies in S&T

Five (5) women who contributed to the implementation of SEI's scholarship programs, STEM teacher trainings, innovations in teaching and learning process, STEM promotions, awards, and recognition programs for the youth were awarded at the recognition. The Ceremony was held last March 29, 2022. The recognition program followed a hybrid setup where more than 100 participants joined physically and via Zoom.

DOST-SEI Director Josette Biyo was also included in this year's *"Leading Ladies in S&T"* Here are the five (5) outstanding women dubbed as the DOST-SEI *"Leading Ladies in S&T."*

1. **MA. DAISY A. DEMONI-SISON,** Supervising Science Research Specialist, STSD
2. **RUBY CAROLIZA D. LAÑA,** Former Chief Science Research Specialist, SEID
3. **DR. RUBY R. CRISTOBAL,** Chief Science Research Specialist, STMERPD
4. **IMELDA S. SARIO,** Former Supervising Science Research Specialist, STMERPD
5. **DR. JOSETTE T. BIYO,** Director, DOST-SEI

MusikaAgapay

The SEI-GAD focal point system in collaboration with the SEI employee's association and the DOST Science Education Institute have organized a fund-raising benefit concert *"MusikaAgapay"* for one of this year's Leading Ladies in S&T – Ms. Daisy A. Demoni-Sison.

DOST Secretary Fortunato de la Peña graced the said concert and gave a short message in recognition of the Leading Ladies in S&T. A Fun-filled and meaningful performances were brought by DOST-SEI employees.

Towards the end of the concert, everybody joined the fun and gave their all in singing and dancing including DOST-SEI Director Josette Biyo who sang a beautiful rendition of *"Tuloy Pa Rin"* by the Filipino band *"Neocolours."*

Yoga Exercise: DOST-SEI GAD's Pursuit for a Healthy Lifestyle

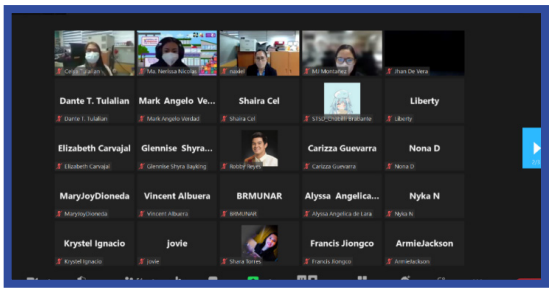
The DOST-SEI GAD conducted a Yoga session as part of the National Women's month celebration in pursuit of a healthy lifestyle as well as GAD's way of combating anxiety during stressful situation.

Last March 30, 2022, the yoga session was joined by participants both on-site and online. The Female employees of the DOST-SEI brought their yoga mats to the DOST-SEI lobby and actively followed each yoga exercise taught by the instructor.

Zumba Exercise: DOST-SEI GAD's Pursuit for a Healthy Lifestyle

Following the successful yoga session, DOST-SEI employees accepted the challenge for the Zumba exercise last March 31, 2022.

Joined by participants on both on-site and online, the Zumba session was able to promote the importance of maintaining a healthy lifestyle through continuous physical fitness among the DOST-SEI employees.



GAD Health Talk: Physical Well-being

Valuing the importance of a well-rounded approach to health, the DOST-SEI conducted the *"GAD Health Talk."* For the 1st part Coaches Brian Aquino and Joana Go gave an informative discussion on physical well-being. The first part of the talk focused on Physical Well-being in which DOST-SEI employees were introduced to basic training exercises towards a healthier lifestyle. Work Ergonomics and Proper Body Mechanics for A Sustainable Quality of Life was also discussed to help employees to stay healthy even in the middle of a busy day at work. The webinar was joined by more than 90 DOST-SEI employees and assigned personnel.

GAD Health Talk: Mental Well-being

For the 2nd part of the GAD Health Talk, Architect Alexander Dominic Mayoralgo shared his expertise on the topic *"Breathwalk"* and answered the question – *"How do we become?"* in a Zoom session last March 31, 2022.

The training session was focused on the topic of *"breathwalk,"* specifically to enlighten the participants on the hidden mechanisms and dynamics of breathing mechanisms and dynamics of breathing that affect health and well-being.

18-DAY CAMPAIGN TO END VIOLENCE AGAINST WOMEN

DOST-SEI 18-Day Campaign Kick-off Ceremony

November 25, 2022

For the kickoff ceremony of the 18-day campaign, the DOST-SEI recorded a video showing the **Statement or Declaration of SEI Commitment** to end violence against women and children. Below is the sample message for the Top Management:

DOST-SEI: 18-Day Campaign to End VAW

Deputy Director Albert G. Mariño

"As the science and technology human resource development agency of DOST, we, at DOST-SEI commit to do our part to the attainment of a VAW-free community. In the past years, we have supported the national cause in protecting women and children from gender-based violence. One of SEI's efforts is the constitution of the committee on Decorum and Investigation where complaints on harassment have been addressed. We remain steadfast in advocating to stop and prevent this problem through the 18-Day Campaign to end VAW.

Director Josette T. Biyo

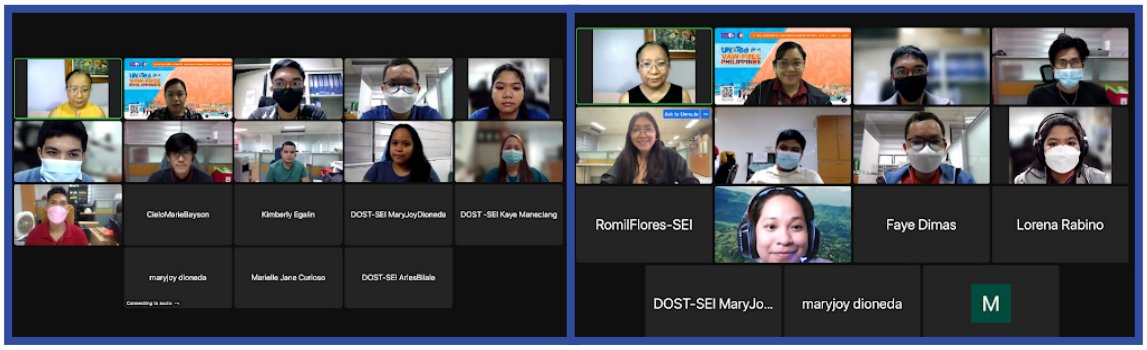
"DOST-SEI will continue to spread awareness to end VAW not only within the institution, but to the community level as well. We will strive to educate the students and scholars so that they can live a life free from violence. This way, we can promote awareness on the forms of violence women and girls experience and provide them with information on the laws that can protect them. We vow to ensure that there will be zero tolerance to VAW and we will foster an environment believing that both men and women are vital for development.

I enjoin everyone to participate in this year's 18-Day Campaign to end Violence Against Women.

The video was posted on SEI GAD's official Facebook page and has reached more than 150 audience.

Distribution of PCW-advocacy materials November 28, 2022

Advocacy posters on safe spaces act prepared and designed by the PCW were given to the Divisions of the DOST-SEI. These posters may be distributed during the conduct of activities for teachers, students, scholars, and other stakeholders. A memorandum will be given to the Divisions for dissemination.



"GAD2Know" Gender Sensitivity Training

December 1 – 2, 2022

DOST-SEI conducted a gender sensitivity training for newly hired employees and those who have not completed the gender and development awareness training to ensure they gained knowledge, appreciation and understanding of the basic GAD concepts, terms, and best practices. This is a two-day training workshop via an online platform and was facilitated by Ms. Marita Pimentel, an independent GAD consultant.

Tanabata's Wife

December 6 and 7, 2022

The DOST-STII invited everyone to watch the virtual screening of the movie, Tanabata's Wife on December 6 and 7, 2022 via Zoom Platform. Over 19 DOST-SEI employees and assigned personnel participated in the screening.

ALISTO: Self-Defense for Beginners

December 7, 2022

This is a 4-hour training on self-defense techniques and tips to provide knowledge and skills to defend oneself against a violent confrontation. Self-defense provides a person with a personal power and skills that may help prevent future violence and abuse. Tips on how to use the contents of the GAD Save Me Kit will be demonstrated.

The Alisto: Self Defense training was joined by 17 DOST-SEI employees and assigned personnel.

Participants of the ALISTO: Self Defense Training

#ShareYourVoice Campaign

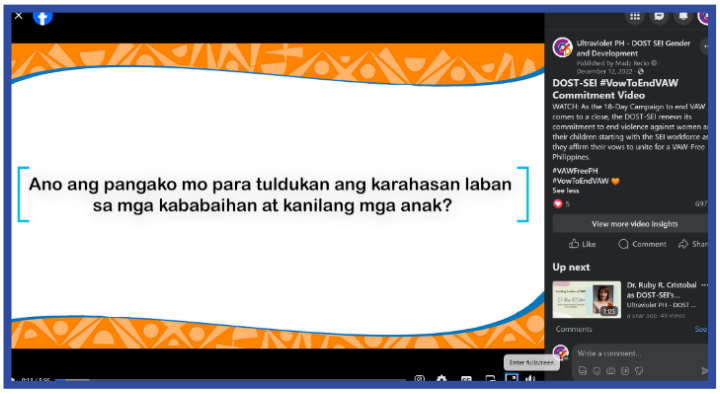
December 9, 2022

The #ShareYourVoiceCampaign is a creation and display of human standees showing various forms of abuse against women and children as part of the 2022 campaign to end VAWC. These are scenarios depicting verbal and physical abuse and sexual harassment.

These standees were placed in the hallway and the divisions were requested to put their opinions, interpretations, and others on December 2 and 5, 2022 on a piece of paper. The comments were consolidated by the GAD Secretariat and forwarded to a resource person for processing and discussion with the employees and assigned personnel on December 9, 2022.

The center piece of the campaign is a life-size DOST-SEI building where hash tags or placards were inserted to strengthened support to end VAWC. This also signified that DOST-SEI is a VAW-free community.

Standees for the #ShareYourVoiceCampaign



DOST-SEI #VowToEndVAW Commitment Video

As the 18-Day Campaign to end VAW ended, the DOST-SEI renewed its commitment to end violence against women and their children starting with the SEI workforce as they affirm their vows to unite for a VAW-Free Philippines.

RECOGNIZING GENDER ROLES: MOTHER' AND FATHER'S DAY

Father's Day is another milestone event observed by the Filipinos and around the world. It is the holiday honoring fatherhood and paternal bonds, as well as the influence of fathers in society. It is celebrated on different days in many parts of the world, most commonly in the month June.

In line with this, the DOST-SEI Gender and Development Focal Point System (GFPS) in collaboration with the DOST-SEI Employees Association has lined up the following activities in celebration of this year's Father's Day:

TikTok: Father's Day in the Life

A Tiktok Challenge was launched to highlight how a father's time is spent in a day, both at the office and at home. The challenge was opened to all DOST-SEI employees and assigned personnel. Female employees who are interested to join, however must portray *"a day in the life"* or the duties performed by their father or husband.

Iron Man: The GAD Style

"Do-it-yourself" or popularly known as *"DIY"* has grown to become a social concept with people sharing ideas, designs, techniques, methods, and finished projects with one another either online or in person.

For Father's Day celebration, the DOST-SEI Gender and Development Focal Person (GFPS) in collaboration with the DOST-SEIEA conducted a DIY activity dubbed as Iron Man: The GAD Style.

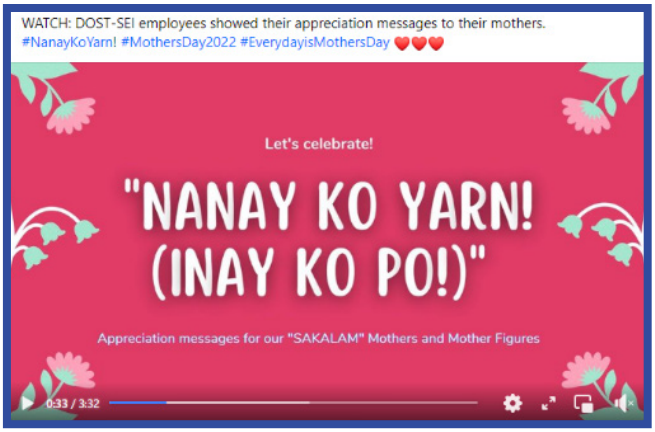
Household chores are often preconceived duties of the mother or any female member of the family. Iron Man: The GAD Style aims to break the gender roles assigned inside the household. Through this activity, fathers will have a chance to show off their skills in doing household chores too.

Mother's Day is a celebration honoring the mother of the family or individual, celebrating motherhood, maternal bonds, and the influence of mothers in society. It is celebrated on different days in many parts of the world, most commonly in the months of March or May, hence the following will be conducted:

Recipe ni Inay

Historically, food preparation and household cooking have been assigned to women, and cooking has been linked to female gender roles and identity. However, with women's increasing participation in the workforce, men have increased their contribution to household work and the gendering of food work is changing.

Therefore, DOST-SEI wants to acknowledge the most important women in our lives who express their love through cooking, thus, it has come up with a Mother's Day contest titled: "Recipe ni Inay" where contestants must showcase their mother's recipe of the most popular dishes and also known as the Pambansang Filipino dish – ADOBO.



Nanay ko yarn! (Inay ko po!)

In celebration of Mother's Day, the DOST-SEI commemorated their mothers through giving pictures and dedicating a special greeting to them. The compilation of the greetings was made into an audio-video presentation that was posted on SEI GAD and SEIEA official Facebook pages.

DOST-SEI Mid-Year GAD Assessment and Planning Workshop with DOST-SEI GAD Technical Working Group

June 8 - 10, 2022

The project specifically aims to generate shared understanding and collective decision-making on how to further improve the GAD performance of the DOST-SEI in terms of project implementation; design GAD programs, projects and activities for the succeeding years in accordance with DOST-SEI GAD Agenda; and conduct Beta Testing of GAD information system.

DOST-SEI Gender Mainstreaming Evaluation Framework (GMEF) Workshop

October 19 - 21, 2022

The DOST-SEI GAD-TWG conducted the Gender Mainstreaming Evaluation Framework (GMEF) Workshop on October 19 – 21, 2022. GMEF was introduced by the Philippine Commission on Women (PCW) as a tool that

will measure the extent of gender mainstreaming efforts of national government agencies (NGAs) and local government units (LGUs). GMEF assists the GFPS members in measuring gains and successes and identify areas for improvement in the way gender and development (GAD) perspective is mainstreamed in the organizations.
The three-day planning-workshop aimed to assess DOST-SEI's gender mainstreaming goals, develop gender-responsive programs, and enhance gender-responsive activities in addressing gender issues and gaps. It will serve as a venue in assessing and evaluating the DOST-SEI GAD performance for the 1st semester and look forward to the things that can further be done and improve as we go along with our planned goals.

DOST-SEI GAD Team Building

The DOST-SEI conducted its team building activity last June 16 to 17, 2022. SEI's top management and employees actively participated in the games prepared by the facilitators.

One of the in-door activities was the *"Quadrant Personality"*, which is a group activity that focused on helping the participants determine their different personalities throughout a series of questions and criteria. Mr. Jabar Esmael, one of the facilitators stressed that gender is more of a social construct and likewise can be compared to a person's behavior. He explained that the more informed and well-versed a person is with the behavior matrix, the easier it is for them to communicate and to connect with others. He also challenged the participants to become more understanding towards other people who might have a different gender preference.

DOST-SEI GPFS ENSURES INCLUSIVITY

GAD Plan and Budget (GPB) and Accomplishment Report (GAR)

The DOST-SEI prepared the 2023 GAD Plan and Budget and submitted it to DOST GAD Unit and Philippine Commission on Women (PCW) for monitoring, transparency and accountability. There were also regular meetings of the member of the GFPS to ensure all activities are sensitive and responsive to the need of the clients and stakeholders.

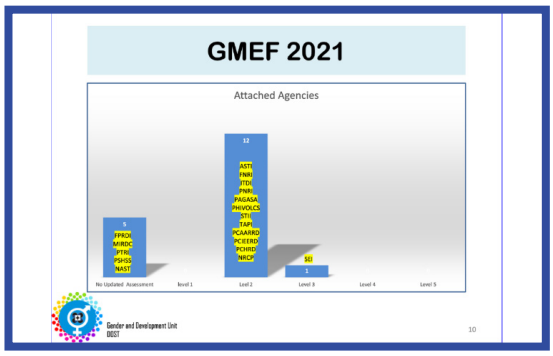
DOST-SEI GPFS USES TECHNOLOGY TO PROMOTE GAD

The DOST-SEI has developed a GAD Information system (GADIS) to house all GAD-related initiatives conducted by the agency. For 2022, the GFPS has conducted the alpha and beta testing of the information system to gather suggestions from clients and GAD resource person. The DOST-SEI is also maintaining and monitoring the SEI GAD's official Facebook page and uploading of local and international contents.

DOST-WIDE GAD ACTIVITY

Virtual Orientation on Creating Safe Spaces in DOST

The DOST-GAD unit conducted a virtual orientation in creating safe spaces on September 19, 2022. SEI employees and assigned personnel were prompt in registering to the virtual orientation.



DOST GAD Focal Point Assembly on October 26 – 28, 2022 at Mactan, Cebu

The DOST GAD Focal Point Assembly was held on October 26 – 28 at Mactan, Cebu. The objectives of the assembly are to build the GAD Focal Point Systems of the DOST agencies and to enhance the knowledge and skills of the GFPS members on the collection of sex-disaggregated data and establishment of GAD database.

During the discussion, the DOST-GAD unit presented the Gender Mainstreaming Evaluation Framework (GMEF) levels of the DOST regional offices and attached agencies. The DOST-Science Education Institute was the only DOST attached agency to reach level 3 of the Gender Mainstreaming Evaluation Framework.

AWARD FOR 2022 DOST GAD MAINSTREAMING AWARD

Science Education Institute – 1st Place

The DOST-SEI bagged the 1st place in the DOST GAD Mainstreaming Awards 2022 during the DOST@64: Gabi ng Parangal at Pasasalamat held last June 13, 2022, at the Sofitel Philippine Plaza Manila, Pasay City. This is the second time that DOST-SEI received the 1st place in the DOST GAD Mainstreaming Awards

2022 DANGAL NG SEI AWARD

DOST-SEI Gender Focal Point System (GFPS)

DOST-SEI GAD Technical Working Group receives the Dangal ng SEI Award with Director Josette Biyo and Deputy Director Albert Mariño.

The DOST-Science Education Institute's FAD Focal Point System was awarded the Dangal ng SEI Award during the institute's 35th milestone anniversary and year-end assessment. The award was given to recognize employees who have manifested exemplary service and conduct within and outside SEI that brought honor to the institute.

ENSURING HOLISTIC WELLNESS OF EMPLOYEES THROUGH THE INITIATIVES OF SEIEA

The Science Education Institute Employees Association (SEIEA) is an organization within the Department of Science and Technology (DOST) that represent the employees of the Science Education Institute (SEI). SEIEA serves as a collective voice for the employees, advocating for their welfare and professional development.

SEIEA works towards fostering a positive and supportive work environment for the employees of the DOST-SEI. The association engages in various activities and initiatives to promote camaraderie, career growth, and employee well-being. These may include organizing social events, providing training and development opportunities, and addressing employees' concerns.

Through its active involvement, SEIEA contributes to enhancing the overall work experience and job satisfaction of all DOST-SEI employees. The association also serves as a platform for fostering communication and collaboration among the employees, enabling them to work together towards a common goal. The following are the accomplishments of the SEIEA:

DOST-SEI 35th Anniversary and Thanksgiving Celebration

The activity was conducted on 13 December 2022 at Philippine International Convention Center, Pasay City with theme Great and Grateful! 35 years of Developing S&T Human Resources attended by almost all DOST-SEI employees and assigned personnel. The project highlighted the DOST-SEI's contribution to the development of S&T human resources in the country through an audio-visual presentation; and awarded DOST-SEI employees and assigned personnel to recognize organizational and individual contributions towards the achievement of SEI's mandates.

Road to Wellness Program

In compliance with Civil Service Commission Memorandum Circulars No. 38 series of 1992, dated 30 September 1992 and No. 06 series of 2011, dated 7 March 2011, the DOST-SEI through SEIEA and FAD-HRMU conceptualized physical and mental fitness program for all the employees. Games in badminton, volleyball, basketball, dart and chess were organized from September to November 2022 and winners were awarded during the DOST-SEI 35th Anniversary Celebration in December 2022.

Commendation for Outstanding Services

Series of activities highlighted the accomplishments and contributions of former STMERPD - Supervising SRS Ms. Imelda S. Sario (24 January 2022); former DOST Secretary Fortunato T. dela Peña (24 June 2022); former STMERPD - Division Chief Dr. Ruby R. Cristobal (27 October 2022) towards the advancement of science and technology in the country and how they inspired people to thrive and foster professional excellence and servant leadership with a shared goal and purpose. Traditional handing of flowers, serenade, audio-visual presentations, gift giving, awarding and others were arranged as part of the event.

DOST-SEI Team Building

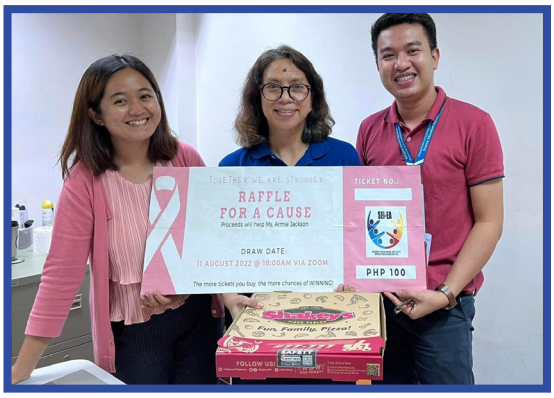
The theme *Resilience in Adversity: Winning Together* means despite the greatest adversity that has happened due Covid-19 pandemic, we remained strong and resilient. The agency values that were engrained in us through the years inspired and helped us bounce back and adjust to the *"new normal"*. Around 120 DOST-SEI employees and assigned personnel attended the activity on 16-17 June 2022 in San Juan, Batangas.

Celebrating Father's Day

SEIEA collaborated with SEI-GPFS in celebrating Father's Day by breaking the stereo typing of gender roles between parents by having the TikTok: Father's Day in the Life and Iron Man: The GAD Style contest. Male employees of the agency joined the contests.

Celebrating the Love Month

SEIEA invited the employees and assigned personnel to spent Valentine's Day on 13-14 February 2022 by organizing a virtual LOVE Bazaar with the tagline *"Di bale nang walang kaDate basta may benta"*. This was opened to all DOST-SEI employees who sold their food products, gift items, and essentials perfect for the valentine's season. There was also the PUSO PadaLOVE where employees sent their messages of love to friends, and mentors.



Caring is giving

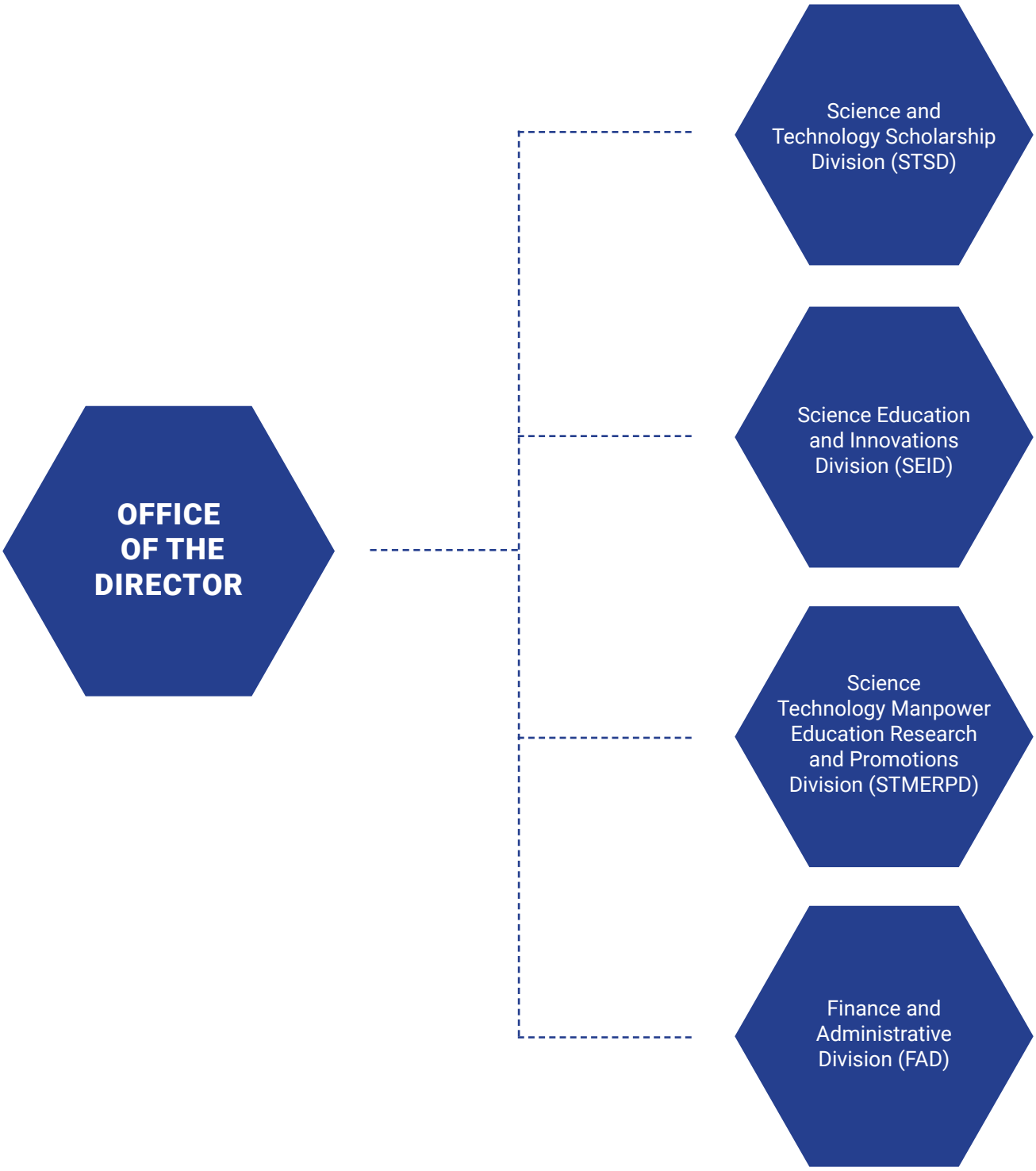
Various activities were conducted to help employees who needs assitance like blood donation, raffle draws, concert for a cause, selling pre-loved items and others.

SECTION

06

UNITED FOR PROGRESS: JOURNEY WITH SEI

ORGANIZATIONAL CHART



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- 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

SEI shall have developed the Philippines' human resource capacity in science and technology required to produce demand-driven outputs that meet global standards.

MISSION

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 innovative programs.

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