

# Technological innovations help achieve UN dev't goals, science chief says

Text and photo by Marshall Louie M. Asis, DOST-STII



In a live interview with host Tony Velasquez (right) of ANC's "Future Perfect", DOST Secretary Fortunato T. de la Peña (left) highlights the important role of the country's technological innovations in achieving the United Nations' sustainable development goals.

**T**he Philippine government marked the achievements of Filipino scientists and science experts as the country celebrated this year's National Science and Technology Week (NSTW). With the Department of Science and Technology (DOST) at the lead, activities highlighted how the country's technological innovations are helping to achieve the sustainable development goals (SDGs) mandated by the United Nations.

According to Secretary Fortunato T. de la Peña, the DOST decided to focus on the sustainable development goals because the time to reach 2030, the deadline for achieving the SDGs, is not too far from now.

"Looking at the 17 SDGs, it is very easy to see that in many of these, science and technology can play a very significant role in the achievement of these goals," explained the DOST chief.

At the 2019 NSTW exhibit area, the 17 SDGs were clustered into eight exhibit areas namely:

food security, energy, and environment; aging society, health, and medical care; S&T human resource development; equity and growth in the countryside; biodiversity and sustainable use of biological resources; sustainable cities and communities; disaster resilience and innovation; and international linkages.

"One cluster was on food security and the environment. There was also something on health and wellness, aging and nutrition for example were included there," Sec. de la Peña added. "There was a cluster on sustainable and smart cities, and also on disaster resilience where most of the technologies of PHIVOLCS like the Hazard Hunter app, which was launched on 17 July was included, as well as PAGASA modernization and improvements."

Another cluster showcased equity and growth in the countryside which focused more on enterprises in the countryside to encourage value-adding activities and employ more people. Technology interventions that help uplift marginalized communities from their

## DOST-supported projects make physical therapy easier in PH

By Angelica Marie Paz, DOST-STII

**I**n the Philippines, there are only 33,000 licensed physical therapists out of almost 105 million population.

To address this shortage, experts from the De La Salle University Institute of Biomedical Engineering and Health Technologies (DLSU-IBEHT) developed two technologies that can assist physical therapists in doing rehabilitation treatments. These are the Agapay Project, catered to the upper extremities, and the Tayo Project for the lower extremities.

The two projects are supported by the Department of Science and Technology-Philippine Council for Health Research and Development.

### Agapay Project

Agapay is an artificial intelligence-assisted therapy innovation that aids the upper limbs (shoulder, elbow, wrist) of patients so they can regain their motor control. The SEMG or surface electromyography enables it to detect muscle contraction.

It is designed as a wearable robot that acts as an external skeleton that can assist the motor movements of the patients. This new technology is user-friendly, and adjustable to the patients' specifications.

This therapy device also uses biofeedback mechanism system that trains patients to recover on their own by controlling bodily processes that usually happens involuntarily such as heart rate, blood pressure, and muscle tension.

The primary target patients of this technology are stroke patients.

continued on page 2



Technological innovations...

from page 1

present situation were exhibited. A cluster on peace and justice, intervening more on the human resource side, was also showcased.

"Since the sustainable development goal talks about partnership and collaboration, we also have a cluster that showed our collaboration in science and technology with our bilateral partners (international linkages)," said the DOST chief.

Sec. de la Peña explained that the clusters were not arranged in order of priority, rather

it was based on DOST's organizational structure that includes councils that deal with agriculture and forestry sector; aquaculture and marine sector; industry, energy, and emerging technologies sector; health and nutrition sector, which fits on the previously mentioned clusters.

There were many technologies of the agriculture and food security side, and also on the sustainability of marine environment and terrestrial resources, followed by those related

to industry and manufacturing, which includes innovations developed by young scientists and inventors through DOST-supported start-ups.

In an interview with Tony Velasquez of ANC's "Future Perfect", the DOST chief provided a run-through of the tech score board in meeting the Philippines' SDGs and invited everyone to visit the exhibits and fairs showcased at the 2019 National Science and Technology Week, which was held 17-21 July 2019 at the World Trade Center in Pasay City.

DOST-supported projects...

from page 1



The Aging Society, Health and Medical Care cluster at the 2019 National Science and Technology Week. DOST-supported projects for physical therapy were displayed here.

Currently, there are already three working prototypes of Agapay. This new development in physical therapy technology also includes games that stimulate real life. This is to reduce the patients' fear and anxiety during the rehabilitation process.

### Tayô Project

On the other hand, the Tayô project is intended for the lower extremities of the body. It is a multifunctional device that acts as a 3D-printed external skeleton for lower limb and early trunk rehabilitation. It is a wearable machine that assists physical therapists to minimize lifting, mobilizing, and transferring patients.

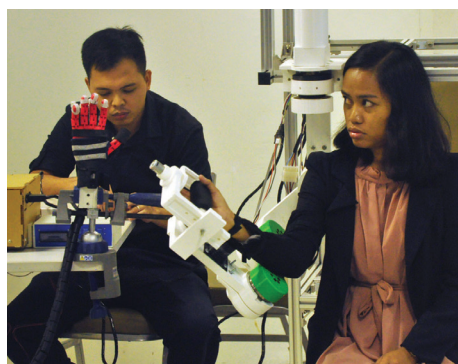
Similar to Agapay, the equipment aims to restore the motion, strength, and ability of patients to stand through performing exercises and various gamification software. The device requires electricity but consumes minimal power only.

The Tayô project is now at the clinical testing stage, and is set to be completed by May 2020.

Julius Banayo, one of the research associates under the Tayô project, said that

these innovations are meant to help physical therapists, not replace them. "It's made to assist them and enable them to handle more patients at a time," he explained.

Further, the lack of manpower and lack of equipment in Philippine hospitals served as the main inspiration in developing these technologies.



A demonstration of the prototype of Agapay, which aids in the rehabilitation of the upper extremities of the body. (Photo from Julius Banayo, Research Associate from DLSU-IBEHT).

By showcasing the Tayô and Agapay projects in events like the National Science and Technology Week (NSTW), Banayo hopes that their innovation could gain more awareness. "This is why we want to bring the innovation here in the NSTW, so we can attract entrepreneurs and business people to adopt our technology," Banayo shared.

Once the technologies are adopted by companies, it would be easier for these equipment to be commercialized and distributed to hospitals across the country. Such will make it the first pure Filipino made physical therapy equipment.

The Tayô and Agapay projects by the DLSU-IBEHT were exhibited in Cluster 2: Aging Society, Health and Medical Care at the 2019 NSTW from 17-21 July at the World Trade Center in Gil Puyat Avenue, Pasay City.

## ABOUT US

The DOST Digest is published by the Department of Science and Technology-Science and Technology Information Institute.

For comments, suggestions or queries, contact:  
(02) 837-2071 to 82 loc. 2148/839-2193 local 107 or  
email: [dost.digest@gmail.com](mailto:dost.digest@gmail.com)

**Framelia V. Anonas**

Editor-In-Chief

**Sheila Marie Anne J. de Luna**

Managing Editor

**James B. Intia**

Layout Artist

**Jasmin Joyce P. Sevilla**

Proofreader

**Allan Mauro V. Marfal**

Circulation

Department of Science and Technology-  
Science and Technology Information Institute  
Bicutan, Taguig City 1631  
Metro Manila  
Philippines

[www.stii.dost.gov.ph](http://www.stii.dost.gov.ph)

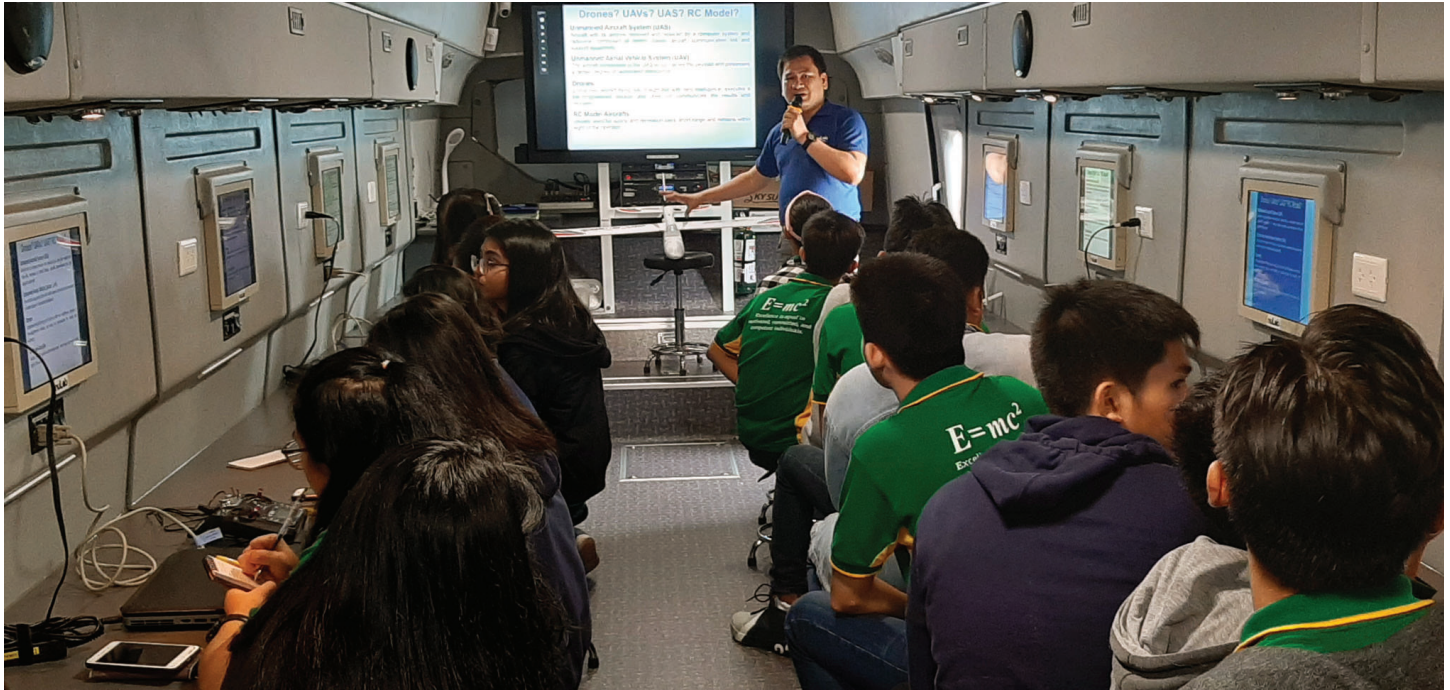
Like us on Facebook/DOST-Science and  
Technology Information Institute





# Science learning on-the-go DOST launches 'nuLab' to discover future scientists, innovators

Text and photos by Allan Mauro V. Marfal, DOST-STII



Dr. Rogel Mari D. Sese, one of the three Filipino astrophysicists, delivers a lecture on the different practical uses of drone to the students from Marikina National High School inside the nuLab bus.

**B**y the bus, this is the Department of Science and Technology-Science Education Institute's (DOST-SEI) latest strategy in discovering the next breed of Filipino scientists and innovators.

Called 'nuLab', this customized bus was launched 17 July at the World Trade Center in Pasay City during the opening of the 2019 National Science and Technology Week celebration.

Installed inside the nuLab are modern audio-visual and educational tools and equipment, laboratory facilities, and various learning materials useful in introducing concepts and developing skills. It can accommodate 24 students in one session and can hold two sessions per day.

The bus, according to DOST-SEI, would allow the Filipino youth to discover their potential in the various fields of Science, Technology, Education, and Mathematics (STEM) and eventually pursue courses and careers along these lines.

At the end of every session, students are encouraged to apply for the undergraduate scholarship program through a strategic campaign called "#Push4science: Maging DOST Scholar Ka!"

DOST-SEI Director Dr. Josette T. Biyo said that 98 percent of the municipalities all over the country have already at least one DOST



The customized bus called nuLab is equipped with modern audio-visual and educational tools and equipment, laboratory facilities, and various learning materials useful in introducing scientific concepts.

scholar. This is a testament that many young Filipinos are interested in pursuing science and technology careers, she said.

"As the nuLab hits the road, it is our way of reaching out to every young Filipino in different sides of the country. It is also our way of providing them access to various advanced learning tools in the field of science and technology," said DOST Secretary Fortunato T. de la Peña.

The nuLab is the second mobile learning facility of DOST-SEI after the success of

the Science Explorer project which has served 32,000 students in more than 100 municipalities.

Scientists and former DOST scholars, namely astrophysicist Dr. Rogel Mari Sese, marine biologist Dr. Aletta Yñiguez, entomologist Dr. Aimee Lynn Dupo, Engr. Myra Ruth Poblete, Engr. Angelo Javier, Charmaine Villanueva-Villamil, Pamela Tolentino, Ana Jammille Restubog, Jomar Rabajante, Gilbert Zamora, Nico Mendoza, Garry Jay Montemayor, Seymour Sanchez, Timothy James Dimacali, Shaira Panela, among others, designed the modules for the NuLab sessions.



# Chris Tiu named as DOST ambassador

By Sheila Marie Anne J. de Luna, DOST-STII

Photo by Kimverlyn C. Sayson, DOST-STII

**T**he Department of Science and Technology (DOST) has found a new ally in promoting science, technology, and innovation.

Television host, entrepreneur, and former basketball player Chris Tiu is now the DOST's brand ambassador, bringing with him his many achievements, credentials, and positive influence, especially among the youth.

Tiu was launched as brand ambassador of the DOST during the opening program of the 2019 National Science and Technology Week (NSTW) on 17 July at the World Trade Center in Pasay City.

At the press conference for the NSTW, Tiu thanked the DOST for choosing him to be the Department's brand ambassador. "I hope that I can help you out in your advocacies in promoting science and technology especially among the youth," Tiu said.

"My role is to help encourage the youth to love science or to pursue a career in science, or at least consider it," added Tiu.

He also expressed hope that the youth can channel their interest in social media in creating content related to science. "I want to help the youth to realize that science is cool and it is for everyone and benefits us all," Tiu explained.

Secretary Fortunato T. de la Peña also expressed hope that with Tiu on board as the



DOST ambassador, more people will be aware of how science and technology can help them.

"We had a long list of names to choose from as DOST ambassador and I am very glad that we eventually chose Chris Tiu to be the face of DOST. His interest and knowledge on science will be beneficial for all us," the Secretary said.

Chris Tiu or Christopher John Alandy-Dy Tiu graduated with a degree in Management Engineering from the Ateneo de Manila University. He first made a name for himself when he played for the Ateneo Blue Eagles basketball team in the UAAP. From there, he went on to play professionally for the Philippines' national team and the Philippine Basketball Association.

After retiring from professional basketball, Tiu explored the world of show business as television host for several shows, including his current show, iBilib on GMA 7. The show features scientific experiments and explores scientific facts and theories surrounding everyday events.

Aside from hosting, he is also a commercial model and products endorser, and has also served as Sangguniang Kabataan Chair of Barangay Urdaneta in Makati City. At 33, he owns or partly owns and manages several business enterprises.

With all his achievements so far, he has been awarded with several recognitions including the Ten Outstanding Young Men Award in 2013.

Tiu was one of the top choices among several celebrities that were identified as possible endorsers or influencers for the DOST in a commissioned survey done in the last quarter of 2018.

The NSTW is held annually and features the latest technologies and innovations in the fields of agriculture, enterprise development, industry, emerging technologies, health and nutrition, information and communication technology, and disaster preparedness.

## inFOCUS .....



**Cloud in a bottle.** The student-participants excitedly tried the mini experiment on how clouds are formed using a specialized plastic bottle. Bernard R. Punzalan, a meteorologist from the Department of Science and Technology-Philippine Atmospheric, Geophysical and Astronomical Services Administration (DOST-PAGASA), explained that the rubber squeeze on the bottle cap pumps air into the bottle and forces water vapor in the atmosphere to compress together inside. As soon as the bottle cap is opened, pressure is released and this simulates what a cloud looks like inside the bottle. Using this experiment, Punzalan discussed how typhoons are formed and how people can prepare before, during, and after a typhoon. The "cloud in a bottle" experiment is part of The Disaster Summit for Stakeholders held 18 July 2019 at the World Trade Center, as part of the celebration of the National Science and Technology Week on 17 to 21 July 2019. (Text by Jasmin Joyce P. Sevilla, DOST-STII and Photo from DOST-STII).