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work for you

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DOST-ITDI standardizes wine starter to improve local rice wine

By Del-Delica Gotis
S&T Media Service, DOST-CAR

Tapuy, a local rice wine very popular in the Cordillera Province may soon sit side-by-side with Japanese *sake*, Malaysian *tapai*, Chinese *chao ching chu*, and the likes in international wine cellars. This international market prospect is made clearer by researchers at the Department of Science and Technology's Industrial Technology Development Institute (DOST-ITDI) who found the key to better quality *tapuy* by improving the process of producing the starter.

The exquisite taste of *tapuy* oozes from *bubod*, a wine starter that can consistently produce quality *tapuy* with improved yield and appealing taste. *Tapuy* is prepared by fermenting glutinous rice using *bubod*. After fermentation, the glutinous rice becomes soft, with liquid forming on top of the mixture.

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Photo courtesy of DOST-CAR



http://www.ys.com/files/201206facebookkids

DOST-NAST eyes new strategies in educating the Alpha generation

By Angelica A. de Leon
S&T Media Service, DOST-STII

The National Academy of Science and Technology (NAST), an advisory body of the Department of Science and Technology (DOST) presented several policy recommendations to make education more attuned to the needs and personalities of today's generation of young learners. Called the Alpha Generation, today's learners are products of early schooling programs and tutorials, and weaned on advanced information and communication technologies such as the Internet and social media.

These modern environmental factors have helped reshape the psyche of these learners, thus requiring necessary changes in teaching and learning methods.

"There is no denying that today's generation is very different from the one

that we knew several years ago," stated NAST President, Academician William G. Padolina, in his welcome remarks during the "Round Table Discussion (RTD) on Educating the Alpha Generation" recently organized by NAST's Social Sciences Division at the Hyatt Hotel Manila. The RTD drew insights from respected members of the academe who presented

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the latest trends and research findings on educating Filipino youngsters aged 6-16.

Shifting to process-induced learning

One of the proposals was to shift from the more traditional teacher-induced learning methodology to process-induced learning or PIL.

The Central Visayan Institute Foundation (CVIF), a secondary school in the remote municipality of Jagna, Bohol has been implementing PIL since 2002 under its Dynamic Learning Program (DLP).

In her talk on "Experiences and Insights on Educating Generation Y and Z: A Springboard for Educating Generation Alpha," Dr. Ma. Victoria Carpio-Bernido, CVIF principal, said that the school's PIL program is anchored on improving learner disposition among its high school students.

This entails biological conditioning and habit formation activities, among others, according to Dr. Bernido. In CVIF, these are achieved by requiring students to record their activities and learning targets in their Activity Sheets every day.

"This is a daily protocol which serves as internal motivation for the learners. It is habit forming and their brain starts telling them that it's time to learn. This will make them more prepared for the more rigorous work ahead in college," explained Dr. Bernido, a renowned physicist and a 2010 Ramon Magsaysay awardee.

CVIF's parallel classes scheme with limited teacher intervention likewise helps improve learner disposition. This means all sections in



DOST-NAST President William G.

each year level are having the same subject periods at the same time. For example, all First Year classes are having Science subjects at the same time in the morning to conform with the students' biological cycles.

In the case of Science being a difficult subject, scheduling the class in the morning would be ideal because at this time of the day, the students still have the physical and mental energy to deal with a complex subject.

During classes, expert teacher intervention is limited to only one-third or one-fourth of the whole subject period. The expert teacher refers to the subject teacher. For the rest of the period, only a facilitator is present. A facilitator could be a teacher of another subject.

"This strategy will give students more time to do independent work on standardized tasks and increase their attentiveness as well," Dr. Bernido remarked. She explained further by saying that by the time the expert teacher comes in and takes over the class, the students will be more eager to listen to her discussion and therefore be more attentive.

Classes in CVIF have no introductory lectures for 70 to 80 percent of the time as well. Instead, independent learning activities – exercises and problem solving tasks, among others – are held immediately. This is opposed to common classroom practice where lectures and class discussions are held for 70 to 80 percent of the time.

The school also implements strategic study-rest periods and prohibits students from bringing home their projects. Homework is also not given in all subjects for all year levels. The reason for this, Dr. Bernido explained, is for the parents to make sure their kids are in bed early, instead of having them in front of their computers and pretending they are doing their assignments and school projects.

"If they are in bed early, they don't have any reason to be sleepy in school. Instead, they will have enough energy for schoolwork the whole day," said Dr. Bernido.

Aside from CVIF, 156 other public schools in Bohol have adopted PIL in their curriculum as well as in various primary and secondary schools in Cagayan de Oro, Zamboanga, Davao, Leyte, and Manila, among others.

More attention on science, math

Aside from addressing the unique needs of Alpha Generation, the program also hopes to achieve a more specific and localized objective: produce more qualified teachers in science, technology, engineering, and mathematics related disciplines or STEM, and increase the number of students enrolling in these courses.

"STEM have been observed to play a very dominant role in the economic development of countries," said Dr. Bernido. "Government is focusing on these disciplines, but the reality is that there is a decline of qualified teachers as well as a decline in the number of students in these disciplines. So we go back to the question 'Why is there a decline?'" she elaborated.

One of the reasons, according to experts, is the general perception that these are difficult subjects. "Hence we try to address this through the curriculum that we implemented under the DLP which will improve the learner disposition, combined with a good STEM curriculum," explained Dr. Bernido.

The need for kids to be resilient

Dr. Queena N. Lee-Chua, associate professor of Ateneo de Manila University's Psychology Department, added that children need to build their resilience. "We need to develop them today. They also need at least one positive role. On the other hand, parents should challenge their kids to meet high expectations, find their individual strengths, encourage them, while avoiding hyper or under-parenting."

Equally important, she said, is for parents to set goals with their kids, instead of setting their own goals for their kids without asking the latter about their plans.

"The challenge now is to guide learners situated in diverse local and global conditions to superior levels of performance in disciplines of their choice," said Dr. Bernido.

"Being in the early years of the generation, many of the current trends are unprecedented. If we are expecting a better future, then something must be done in the education system of the Alpha Generation to properly guide the youth in their journey," Padolina declared.

About us

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Coat the town green with DOST's smarter, dirt-proof paint technology

By Joy M. Lazcano
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Smarter technologies are beginning to move into Filipino households as the Department of Science and Technology ushers in its Smarter Philippines program. In fact, local experts are busying themselves developing technologies for smarter living.

So how about a recently-developed paint that makes your house bright and even rids out dirt and other microbial elements?

Put your brush up to the DOST - Industrial Technology Development Institute's (DOST-ITDI) self-cleaning paint. This acrylic based paint has the ability to repel water. When applied on a concrete surface, it lets liquid just flow without seeping into the paint, consequently carrying dirt such as dust particles, oil-loving dirt, and others, thus effectively "cleaning" itself.

The paint technology mimics the lotus and *gabi* plant leaves that have complex structures such that water droplets that land on the surface pick up particles as they flow

out, minimizing adhesion of dirt on the leaves. Such characteristic is called the lotus effect.

The self-cleaning paint has titanium oxide and locally sourced silica which, when exposed to ultraviolet rays, exhibits its photocatalytic property. This means it breaks molecules of emission gases on its surface. This protects the paint from any discoloration due to organic microbes from gas emissions and oils.

Through nanotechnology, DOST-ITDI enhances this functional capability as it develops said environment-friendly paint. This innovation also prolongs the luster of the paint. This emerging paint technology is already in the market for sometime in some countries. However, the premium price makes it unaffordable to most people.

According to Dr. Araceli Monzada of the Materials Science Division of DOST-ITDI, the locally developed self-cleaning paint will be more affordable than the commercially available paints when it reaches its

commercial stage as it uses locally available additives.

The paint technology is expected to cut down annual maintenance costs significantly in buildings which will no longer require annual washing and periodic repainting to retain its luster. In Singapore, the cost of washing a building once a year is at SGD10,000 to SGD50,000 (P330,000 to P1.65M) and in some malls, washing is normally done quarterly. Because of the long retention of the paint's luster, users save water to be used in washing. The less frequent washing will also minimize surface damages on the buildings caused mainly by strong detergents and high water pressure from water jets.

Currently, the paint is available only in white, but DOST-ITDI is set to develop other colors. Dr. Monzada also added that with the importance of this innovation, the institute plans to design the paint for use in the automotive industry.

DOST-ITDI standardize...
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This liquid is *tapuy*, known for its acidic but sweet alcoholic flavor and a pleasant aroma.

The secret behind making good *tapuy* is good quality *bubod*. As part of DOST-ITDI's continuing quest to help improve the competitiveness of the local industries, ITDI-based experts finally standardized the process of making good quality *bubod*.

Traditionally, *bubod* comes in the form of flattened and rounded balls of various sizes and are compact and dry.

According to Michelle Evaristo, Science Research Specialist II at ITDI's Food Processing Division and also the project leader, the improved *bubod* is made from powdered NFA rice and cassava flour, both cheaper than the traditionally used glutinous rice.

The researchers mix pure cultures of the mold called *Rhizopusoryzae* and the yeast *Saccharomyces cerevisiae* to the rice-flour. Then they add water, form it into dough, granulate the mixture, and then incubate it to allow the growth of organisms.

The dough is oven-dried until the moisture content dips to 9-12 percent. The mold produces enzymes that will breakdown the starch into simple sugars, which will then be used by the yeast to produce alcohol.

"What makes this newly improved *bubod* different from the traditional one is that it is



now granular in form, allowing more surface area for faster drying, as well as making organisms grow better," Evaristo emphasized. Hence, incubation takes only overnight instead of the traditional 48 hours. Growth of more beneficial organisms is also achieved using the granular form resulting to a pure culture that gives better quality wine. "All in all, this developed *bubod* has good microbial quality and is quicker to prepare," she said. The *bubod* also increased rice wine yield with higher alcohol content.

In terms of shelf life, she said that the *bubod* can last up to 12 months and still be capable of producing good quality rice wine.

"And with the improved *bubod's* good performance, starting this month, we are working on standardizing the whole process of rice wine production and we are now conducting upscale trial production and further evaluation," she told.

A good quality *bubod* which is actually fermented rice turned into a dough is the secret behind a good tasting *tapuy*.



Photo courtesy of DOST-CAR

This innovation has also solved a lot of problems encountered by *tapuy* producers, such as short shelf life, low yield, higher production cost, adulteration, inconsistency in the quality of *bubod*, and packaging-related problems, she added.

DOST-CAR (Cordillera Autonomous Region) with ITDI are currently poised for a dry run in preparation for the eventual commercialization of the technology.

ASEAN & dialog partners bat for stronger S&T ties in the region

By Angelica A. de Leon
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The 65th ASEAN Committee on Science and Technology Meeting (ASEAN COST-65), organized by the Department of Science and Technology (DOST), opened on May 20, 2013 at the Taal Vista Lodge in Tagaytay City to formally usher in the start of this year's discussions on common issues in science and technology currently affecting ASEAN member nations.

ASEAN-COST Chairman for the Philippines and DOST Undersecretary for S&T Services Fortunato T. dela Peña delivered the opening remarks in behalf of DOST Secretary Mario G. Montejo to welcome the 100 delegates from ASEAN member nations, including representatives from ASEAN's dialogue partners namely the United States, Austria, Belgium, Germany, China, Japan, and India.

The Plenary Session for Sub-Committee Meetings officially kickstarted the opening day of the six-day biennial event. Discussed were matters and issues in the 64th meeting



ASEAN Science Ministers converge at the scenic Tagaytay City to jumpstart talks on common science and technology issues affecting the ASEAN community. (Photo by Henry De Leon, S&T Media Service, STII)

of ASEAN COST as and the 7th Informal ASEAN Ministerial Meeting (IAMMST -7) held in Brunei. These talks served as jump-off points for the Sub-Committee dialogs.

Foremost among these was the Krabi Initiative 2010, a program endorsed by S&T ministers during the 6th Informal ASEAN Ministerial Meeting on S&T held in December 2010 in Krabi, Thailand. The Krabi Initiative seeks to raise ASEAN's competitiveness in the global village by leveraging the capabilities of science, technology and innovation. Specifically, the program aims to achieve its mission via identified key areas, namely ASEAN Innovation for Global Market, Digital Economy, New Media and Social Networking, Green Technology, Food Security, Energy Security, Water Management, Biodiversity for Health and Wealth, and Science and Innovation for Life.

Other issues handled include the reorganization and restructuring of COST, establishment of new funding mechanisms,

and performance review of the various sub-committees. Also discussed were updates on ASEAN's collaborations with its dialogue partners and their existing project, such as the Talented Young Scientist Visiting Program and ASEAN-China Technology Transfer Center with China, and the ASEAN-US S&T Fellowship Program and ASEAN-US Award for Women in Science with US.

Other activities include the ASEAN-EU Dialogue Meeting and the ASEAN-US Consultation Meeting, and a tour of the DOST office in Taguig City and the Bonifacio Global City, also in Taguig.

Established in 1978, the ASEAN COST aims to strengthen S&T in the region by ensuring that cooperation between members on S&T initiatives remains relevant to present day challenges and supportive of the directives set by ASEAN leaders and S&T ministers. ASEAN is composed of Singapore, Malaysia, Thailand, Indonesia, Philippines, Brunei, Laos, Cambodia, Myanmar, and Vietnam.



DOST info materials to help curb dengue in the Cordilleras.

Dr. Aristotle P. Carandang (right), chief of the Communication Resources and Production Division of the Department of Science and Technology's Science and Technology Information Institute (DOST-STII) presides in the distribution of instructional posters, comic books in the vernacular, and other informational guides on the use of ovicidal/larvicidal (OL) traps, in ceremonies held at the Mountain Province Science and Technology Center in Bontoc. OL traps are effective in curbing the population of the dengue-causing mosquito *Aedes aegypti* and DOST-STII's developed OL trap information materials are likewise critical in the national campaign against dengue. Dengue continues to menace many parts of the country including the Cordillera Administrative Region. From left: Norberto Cobaldez, Mountain Province S&T director, and Rose Chao-angan, general manager of the Anabel-Sadanga Multipurpose Cooperative, one of the biggest in the province. (Alan C. Taule, S&T Media Service)