CONSOLIDATED REPORTS

AY 2013-2014 & AY 2014-2015

Research @ De La Salle University

RESEARCH @ DE LA SALLE UNIVERSITY

Consolidated Reports for Academic Years 2013-2014 and 2014-2015

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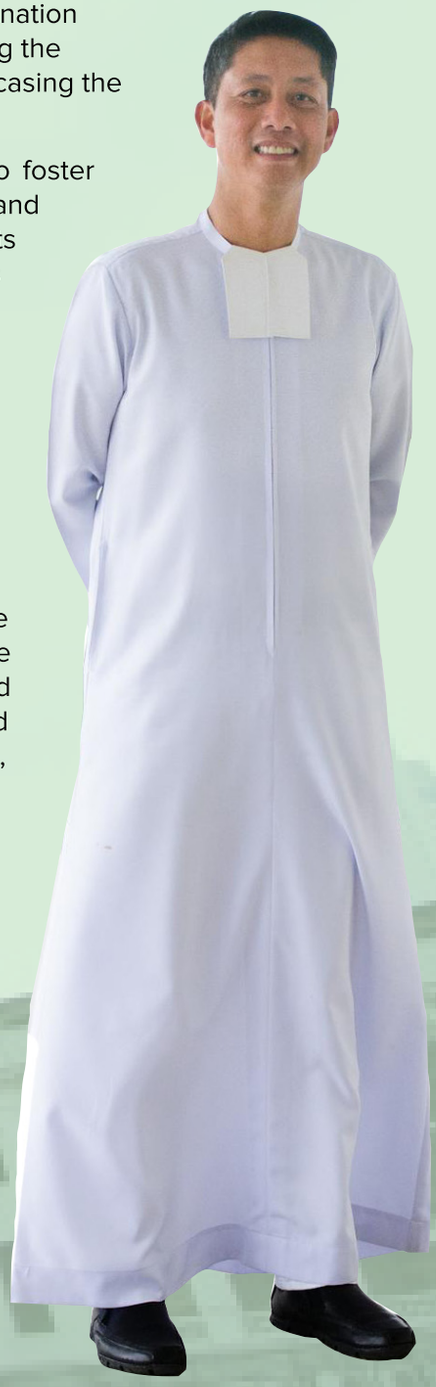
FEATURED RESEARCHERS

Message from the President/Chancellor



Congratulations to the University Research Coordination Office for this consolidated annual report covering the period AY 2013-2014 to AY 2014-2015 and showcasing the research activities and output of the University.

It has always been a part of DLSU's vision-mission to foster a conducive environment for research among its faculty and students, especially among those who are enrolled in its graduate programs. The research process and rigors of scholarly pursuit have always been an important inherent activity in institutions of higher learning in the country, but it seems that people are more focused on the output of such activities, the knowledge generated, and innovations introduced. This has been so for a considerable period that it appears that the research process and its accompanying rigors have not been widely acknowledged or appreciated by many Filipinos. In recent decades, however, Filipinos seem to have become more interested in research as an scholarly exercise. They have started paying attention to how the outputs of this exercise are generated, thus the focus on reliability, authenticity, and validity that necessarily look back at how data are collected including demographics and profiles of survey participants, how findings are arrived at, and so on. To this end, DLSU has ensured reliability of sources of data and information. It has been discerning in the employment of methodologies and strict on quality of output rather than quantity. It has organized basic and advanced research capability-building and proposal writing workshops for its faculty and students. The University has likewise been keen on ensuring that the research projects will be useful and relevant in policy formulation, legislation and in improving the processes and quality of life in society. It does not stop at the mere compilation of findings into a report, but makes sure that these valuable findings are widely disseminated in a forum and published in highly respected and indexed journals.

Keen on achieving the vision-mission of a "leading learner-centered research university..." DLSU, through

its research centers and institute, has embarked on projects that have sought to introduce innovations and breakthroughs in the spheres of the academe, industry and various disciplines. It has sustained efforts to nurture a research culture that encourages the faculty to validate existing theories, challenge current knowledge, and 'think out of the box.' as well as to involve its students, particularly those in the graduate programs, in scientific investigations and scholarly pursuits that would impact not only the University but also, more importantly, society

It is heartwarming to note that during the recent decades, the University has experienced a rise in research productivity which can be credited to the intensified campaign of the Office of the VCRI and URCO and to the vibrant response of the various research centers and institutes. In 2014 and 2015, DLSU has moved closer to achieving its vision-mission. It has published 1,780 research papers and accumulated 12,203 citations. DLSU is keen on surpassing these measures of research productivity in the coming years.

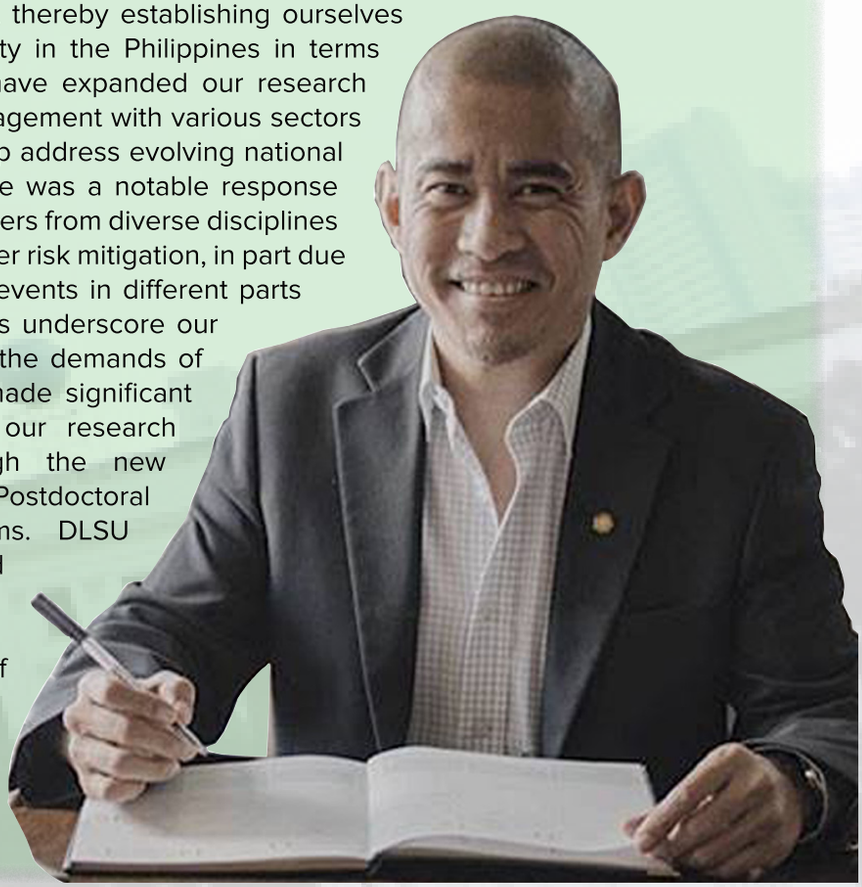
I wish the Office of the VCRI, URCO, and the different research centers and institutes all the best and more success in all their future endeavors. May they continue to be at the forefront of research productivity in the country.

BR. DENNIS MAGBANUA FSC

Message from the Vice Chancellor for Research and Innovation

De La Salle University (DLSU) was founded in 1911 as the De La Salle College (DLSC) with the mission of educating young Filipinos and developing them to become the nation's leaders. When DLSC became a university four decades ago, our institutional *raison d'etre* changed and expanded to include research—an activity that is widely considered to be fundamental to any reputable institution of higher learning. Today, we do research because knowledge generation is essential to provide answers to humanity's pressing challenges such as poverty alleviation or climate change mitigation. As a result of its unique position in society, academia is well-situated to be able to see past the "blind spots," and thus provide insights that can assist decision-makers in industry and government to make informed choices. Furthermore, in our pursuit to train young people to become competent players in the modern knowledge economy, our research activities ensure that our students see knowledge production as a dynamic and organic activity in which they can actively participate. This is a far cry from the obsolete model of educational institutions transferring a static body of knowledge to every generation.

Since the turn of the century, DLSU has emerged as one of the Philippines' major research-oriented institutions of higher learning. We have taken great strides towards achieving internationally competitive knowledge generation across a wide range of academic disciplines. Academic Years 2013-2014 and 2014-2015 were marked with significant milestones. In mid-2013, we reached the landmark of 1,000 cumulative publications in the Scopus research database, thereby establishing ourselves as the leading private university in the Philippines in terms of scientific publications. We have expanded our research activities further to include engagement with various sectors of society for initiatives that help address evolving national needs. During this period, there was a notable response among the University's researchers from diverse disciplines to meet the challenges of disaster risk mitigation, in part due to recent climatic and seismic events in different parts of the Philippines. These trends underscore our institutional responsiveness to the demands of the times. We have likewise made significant progress towards expanding our research workforce, particularly through the new Ph.D. Apprenticeship and Postdoctoral Research Fellowship programs. DLSU has also successfully partnered with various funding agencies to further align its efforts with developmental needs. Much of our current research portfolio is funded by government agencies (e.g., Department of Science and Technology,



Commission on Higher Education), private foundations (e.g., the OML Center for Climate Change Adaptation and Disaster Risk Management Foundation, Inc) and overseas development agencies (e.g., United States Agency for International Development via the Science, Technology, Research, and Innovation for Development Program).

As we celebrate these recent achievements, we look forward to the challenges that lie ahead with a sense of optimism in our collective ability to rise to the occasion. The country and the world need new knowledge and graduates who are firmly grounded in the process of knowledge creation. As an institution of higher learning, and recognizing that growth in human capital is a prerequisite to a sustainable social and economic development, we must continue to play a vital role in nation-building by augmenting the country's workforce with professionals who are globally competitive. There is no doubt that research will continue to play a key role in DLSU's efforts in this regard.

RAYMOND R. TAN, PH.D.

From the Margins to the Mainstream of Society: Transforming the Lives of Workers with Exceptionality, Their Co-workers, Business, Corporate Practices, Policies and the Workplace

Dr. Roberto E. Javier Jr.
Dr. Ron R. Resurreccion
Mr. Mark Anthony M. Velasco
Dr. Feorillo Petronilo A. Demeterio III
Dr. Raymund B. Habaradas
Mr. Crisanto Q. Regadio, Jr.
Dr. Melvin A. Jabar
Ms. Klarizze Y. Valdoria
Mr. Graeme Ferdinand D. Armecin

Unilab Foundation Executive Director Rhodora Fresnedi with Project Director Roberto Javier, Jr. and co-investigators Melvin Jabar (front row), Feorillo Petronilo Demeterio III, Raymund Habaradas, and Ron Resurreccion and research assistant Klarizze Valdoria with Unilab Foundation members during the MOA signing for the project.

The Social Development Research Center (SDRC) is the research arm of the College of Liberal Arts. It seeks to fulfill the two-fold mission of functioning as a hub in the Philippines and the Asia-Pacific region for research and advocacy; and of forming a bridge between the academic community and the society and community it serves. Its vision is for Filipinos and the people of the Asia-Pacific to enjoy an improved way of life, and to live under decent conditions in an environment that accords them human dignity and respect. SDRC's programs and endeavors have resulted in policies and projects that address identified needs. The Center has helped put up schools, generate income, organize communities, and promote better service provisions in various aspects of health, governance, and social service. By encouraging the participation of beneficiaries through capacity-building and training, among others, SDRC has earned the trust of donor agencies and increased their faith in people's capabilities.

Introduction

Philippine Republic Act No. 7277 clearly stipulates that "no disabled person shall be denied access to opportunities for suitable employment." Despite this legislation, however, employment opportunities for persons with exceptionality (or differently-abled persons) in the country remain relatively sparse. The few public and private institutions that provide work opportunities for persons with exceptionality have helped enhance the economic status of differently-abled persons. They have helped not only in furthering the economic status of mentally-challenged persons, but also in improving their psychological functioning. It is in this light that the project team conducted

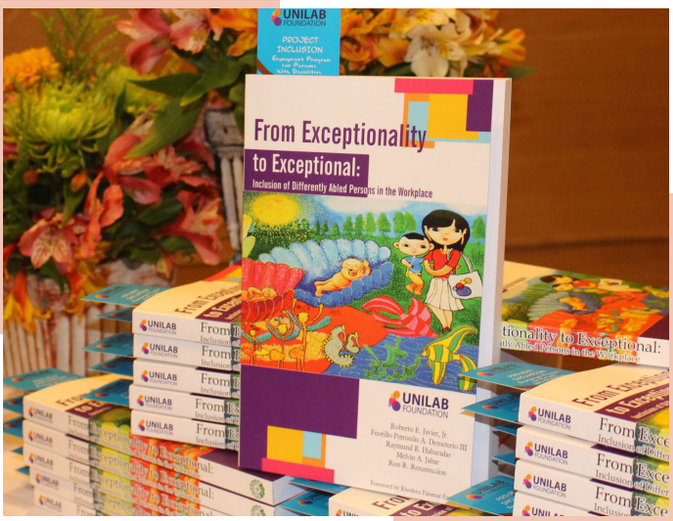
a study on the inclusion of persons with exceptionality in the workforce.

The research describes the present state of the environment of differently-abled workers, including corporate practices, policies pertaining to their condition, and their relationship with co-workers. It presents pieces of empirical evidence on how the neurocognitive functions of workers, specifically those with autism and the socio-emotional sense-abilities of mentally-challenged individuals, can be transformed into exceptional work performance and productivity.

The project team also explored how work can effect changes in their behavior, specifically in terms of social adaptation. It determined the enabling mechanisms in the workplace, such as internal (corporate policies) and external forces (State policies) and HR practices, that are geared toward mainstreaming persons with exceptionality through employment.

Research Design

The study was conducted in selected companies in at least three cities each in Luzon, Visayas, and Mindanao in the Philippines. The workers identified were exhibiting either autism spectrum disorder or intellectual disability based on the Diagnostic and Statistical Manual for Mental Disorder 5 2013 (DSM-MD5).



A sourcebook published by the DLSU Publishing House as an offshoot of the study was launched in September 2014.

Employing a multidisciplinary approach, the project team undertook the investigation in different fields of study and varied perspectives. A transdisciplinal design was employed, where the investigator (who was also the study instrument) designed and developed data-generation/analyses such as planning, and doing ethnography, i.e., from entry to exit in a given field site (the workplace, for purposes of this study). It used the naturalistic inquiry method into the work life of employees identified to have exceptional abilities, skills and behavior (autism, mental retardation) in a corporate setting.

The research plan incorporated both human and sustainable development models into the growth model of development for the organization. It emphasized the business case for employment of workers with exceptionality. A business case was presented as an argument or a justification to elicit approval for a proposed undertaking or action. In the human development aspect, the inclusion of persons with exceptional abilities, skills, and behavior in the workplace was found to promote health benefits and wellness to workers, their families and communities. The participation of employees in the process of integration of persons with exceptionality through program reviews, policy action and research involvement provided for the sustainability of such efforts as “project inclusion,” as there was commitment and ownership of the activity.

Five main aspects of the work life of persons with exceptionality and work organization constituted the focus of the investigation. These were:

1. the **Developmental Aspect/Clinical Aspect** of the perceived effect of work behavior, cognition, and emotion on workers identified under either the autistic spectrum disorder or the mental retardation category of the DSM-MD5;
2. the **Business Aspect/Organizational Aspect,** with these two components, namely:

2.1 **the performance and productivity of workers with exceptionality,** which involve assessment of work-related behaviors, issues and concerns, and challenges (absenteeism, punctuality, health, safety, retention, lost-time, compensation claims, output, and turnover); and

2.2 **a description of the work environment, co-workers' experiences, corporate practices, and company programs** (for employees with exceptionality, this refers to workplace accommodations, work design and layout, equipment, recruitment and training, and supervision, including investments in and costs of these factors); and

2. the **Institutional Aspect,** which describes the internal and external forces affecting persons with exceptionality, their families and communities, business organizations (i.e., policy intention, policy implementation, policy experience) as well as social and State policies (advocacies, legislation, etc.) that facilitate their inclusion.

Salient Findings

The study on the inclusion of adult-age workers with intellectual disability in the job market yielded significant findings that can be used as an HR framework in developing the labor potential of such sector in Philippine society.

The HOPE (**h**uman, **o**rganizational, **p**rocesses and **e**nvironmental) factors comprise the enabling mechanisms for persons with intellectual disability to participate in the country's economic activities, and thereby to be counted among the labor force and be able to contribute to income generation.

- **Human factors** pertain to qualities and attributes of individuals or adults of working age with intellectual disability and their co-workers (managers, supervisors, co-employees). The primary factor for providing a person with intellectual disability access to employment opportunities begins with identifying her/his sufficient level of adaptive functioning in specific skill areas. This is done through proper assessment procedures using well-developed tests and systematic observations. She/he should have the motivation to work, as may be evident to and reported by her/his primary caregivers and shown in her/his work behavior during training (i.e., her/his ability to communicate with significant persons like a teacher-trainer or job coach). These attributes are enhanced during actual exposure to work and its environment.

- **Organizational factors** comprise company policies, social structures in the workplace, work design and all other elements that facilitate the inclusion of persons with intellectual disability in an industry, business, or firm. An example is a directive from a company leader to hire adults with autism, Down's syndrome or intellectual disability. Such a directive serves as a key to opening the doors of the HR to inclusion, and later gives rise to and translates into formal policies that govern workers with intellectual disability as regards their recruitment, training, compensation and benefits. The company also fosters a family-oriented and inclusive atmosphere that enables typical workers to work with those who may be considered "atypical" in the organization. Typical members of the work organization are engaged in such projects as inclusion, as they are assigned to guide and assist atypical co-workers. In addition to company policy and its attendant social structures to support the inclusion project is a work design for atypical workers. This work design pertains to work hours, work area features, tasks, and standards (which include measures of performance that are most

Mark Velasco, Melvin Jabar, DLSU Publishing House Director David Bayot, Roberto Javier, Rhodora Fresnedi, Ron Resurreccion, Raymund Habaradas, SDRC Director Maria Caridad Tarroja, Crisanto Regadio, and book contributor Marika Melgar during the launching of *From Exceptionality to Exceptional: Inclusion of Differently Abled Persons in the Workplace* at the Bayanihan Center.

appropriate for atypical workers). It was found that a work design that fits the skills, temperament, and inclination of persons with intellectual disability resulted in inclusion.

- **Processes** that determine or influence the decision for inclusion of persons with intellectual disability are the HR functions, procedures and practices. Work organizations that ventured into the inclusion of atypical workers had HR units that involved the parents, teachers, and caregivers of persons with intellectual disability in the work orientation and job training. The project team noted that the HR on-boarding practice (the process that begins when an employee starts work and continues for at least six months) for atypical workers is done in a gradual step-by-step process (i.e., hiring, orientation, and training).
- **Environmental factors** refer more to the social rather than the physical aspect that is of value in achieving successful inclusion in the job market, since the employees with intellectual disability are able-bodied and physically fit. It is interesting to note that the more relevant aspect of the work environment is social, which includes the qualities and characteristics of the co-workers of persons with intellectual disability. A major finding in the study suggests that the attitudes and behaviors of HR personnel determine the possibility and the success of inclusion. This means that the HR unit needs a manager and a supervisor who understand cognitive developmental delays brought about by yet uncontrollable natural events. Thus, the manager should be capable of accommodating a worker with intellectual disability and the supervisor should be able to translate such knowledge to skills in order to effectively communicate a specific task and required work behavior to the

person with cognitive limitations. The social sphere within which persons with intellectual disability have to work is the mentally normal population of workers. This workers' group can be typical in dealing with such atypical members of the workforce. What is needed in achieving inclusion is the typical co-workers' sensitivity to and acceptance of the fact that intellectual disability is a lag in an individual's development. Inclusion has to be initiated primarily by the parents, the family, and the caregivers whose attitudes are supportive of and enabling to the individual with intellectual disability as the latter looks for and lands a job, and keeps it.

Conclusions

In the selected companies where cases of workers with intellectual disability were studied, these workers were mainstreamed in the workforce given their cognitive limitations. The following are the major conclusions drawn from the study's findings:

- Despite the limited adaptive functioning of persons with autism, Down's syndrome and intellectual disability, they can obtain and sustain employment because they have the motivation to work and the support of significant others.
- Traditional corporate policies, structures and work environment, and work design do not allow the inclusion of persons with autism, Down's syndrome, and intellectual disability. However, some local firms have initiated practices to accommodate workers with the aforementioned disabilities.
- The involvement of different stakeholders is critical in the employment of persons with autism, Down's syndrome, and intellectual disability.

Project Director Roberto Javier, Jr. gives the remarks of circumstance at the sourcebook launching.

- Gaps between Philippine laws and international conventions on issues concerning the inclusion of intellectually disabled persons in the workplace were noted. There are also gaps between what the Philippine law stipulates regarding the employment of persons with disability and its implementation.

Recommendations

In light of the findings and conclusions, the project team offered the following recommendations to achieve inclusion of adults with autism, Down's syndrome, or intellectual disability in work organizations:

- Encourage registered psychologists in the clinical-developmental and industrial-organizational fields to jointly develop programs that can provide psychoeducation training for parents, co-workers, HR practitioners, business leaders, and business associations on the strengths and challenges of persons with intellectual disability for purposes of employment.
- Promote strategies on zero exclusion in the workplace in the HR practitioners' training on human resource management.

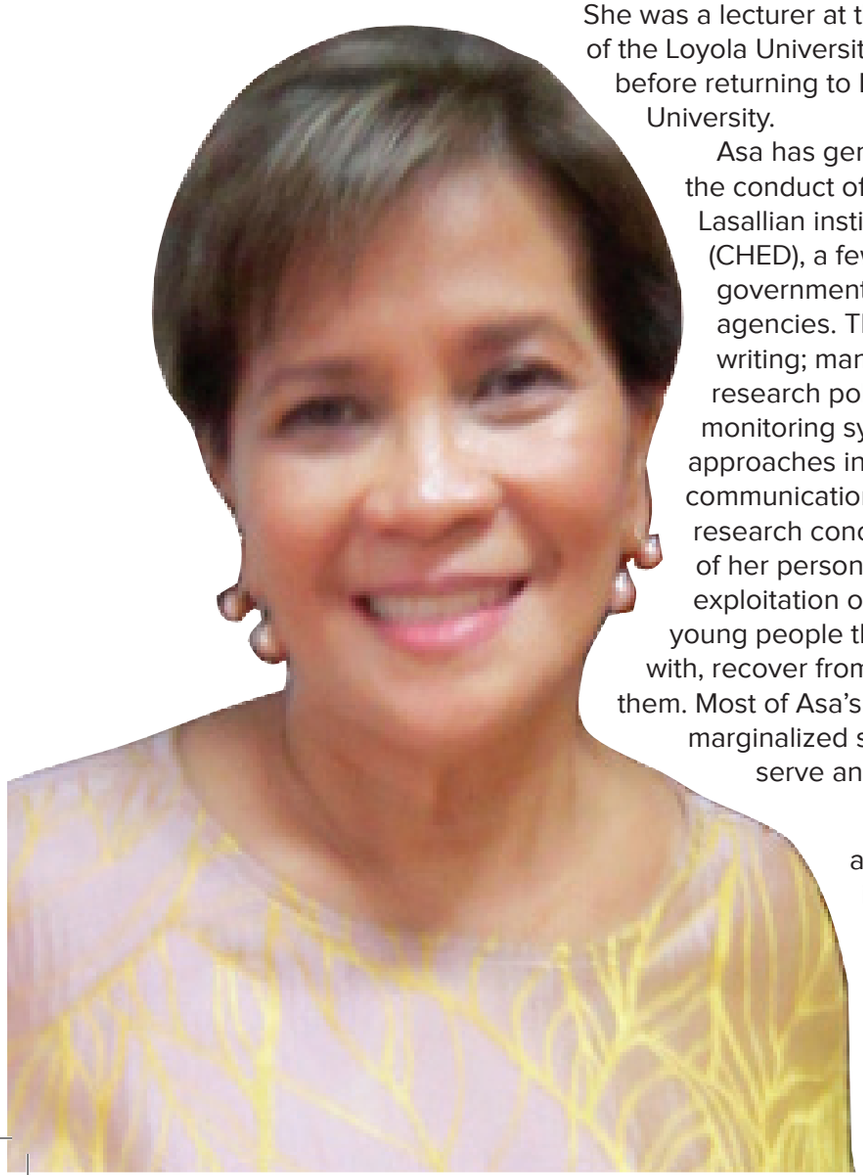
- Redirect the focus in the development of work design for persons with intellectual disability on the number of tasks they can perform for a given adaptive skill instead of merely on the number of skills.
- Promote dialogues on work inclusion among stakeholders.
- Encourage research institutions to conduct more studies on the effectiveness of strategies for the inclusion of persons with intellectual disability in the workplace.

This research was headed by Roberto E. Javier Jr., the project director. The review on policies pertaining to persons with exceptionality as well as their inclusion in the workforce was done by Feorillo Petronilo Demeterio III. Melvin Jabar studied the co-workers' experiences with differently-abled employees. Ron Resurreccion interviewed parents of persons with exceptionality on the impact of work on their adaptive functioning. Raymund Habaradas inquired into the intricacies of the HR in work organizations where differently-abled persons are employed. The research assistants were Klarizze Valdoria, Mark Velasco, and Crisanto Regadio for Metro Manila, and Graeme Ferdinand Armecin for Metro Cebu.

Dr. Jesusa M. Marco

Dr. Jesusa M. Marco, "Asa" or "Dr. Ace" to her colleagues, associates and friends, earned her bachelor's degree in sociology from Maryknoll College (now Miriam College) and her master's degree in social sciences, major in sociology from De La Salle University. She obtained her PhD in sociology from the Loyola University of Chicago in Evanston, Illinois, U.S.A.

Asa had served DLSU in various administrative capacities in the past as: executive director of the Human Resources Development and Management Office (May 2011 to May 2013); associate vice chancellor for research and learning (January 2009 to May 2011); director of the Social Development Research Center (September 2005 to May 2008); dean (September 2002 to May 2004), vice dean (May to September 2002), and graduate studies director (May to September 1998) of the College of Liberal Arts (CLA); graduate program coordinator (June 2000 to September 2002), chairperson (June 1997 to May 1998, June to August 1995, June to December 1985, SY 1982-1983, and SY 1981-1982), and graduate program coordinator of the Health Social Sciences Program (June 1996 to June 1997) of the Behavioral Sciences Department.



She was a lecturer at the Sociology and Anthropology Department of the Loyola University of Chicago (May 1990 to August 1991) shortly before returning to DLSU after completing her PhD studies in that University.

Asa has generously shared her time and expertise through the conduct of various trainings upon the request of other Lasallian institutions, the Commission on Higher Education (CHED), a few state-run universities, socio-civic and non-governmental organizations, and national government agencies. These trainings tackled research proposal writing; managing research centers and formulating research policies in a university setting; client feedback monitoring system; qualitative research, and qualitative approaches in communication research; collaborative culture, communication and information dissemination; and social research conceptualization and methodologies. In pursuit of her personal advocacy against commercial and sexual exploitation of children and youth, Asa engages with these young people through workshops that aim to help them cope with, recover from, and manage the challenges confronting them. Most of Asa's research undertakings have focused on the marginalized sectors of society which she has chosen to serve and help.

She has likewise lectured, delivered talks, and presented papers in various national and international research conferences and forums, the most recent of which are the Health

Inequity and ASEAN Economic Community (AEC) Conference, the Interdisciplinary Research Forum on Research Updates on Infectious Diseases, the International Training Course on Research and Capacity Building on Collaborative Governance, the 3rd Academic Management Seminar Series for Higher Education Institution (HEI) Professionals, and the First National Conference on Health Social Science. Her papers delved into developing effective approaches to dengue control, focusing on eco-bio-social factors of vector density-control; health inequity arising from the case of HIV among migrants in the Greater Mekong Subregion (GMS) cross-border areas; ethics in research; basic social services for vulnerable groups in the Philippines; urban health in the Philippines; research and action through community-based development; assessment and inventory on NGOs working with street children; responses to HIV/AIDS in faith communities in selected Asian countries; socio-cultural dimensions in the prevention and control of reproductive tract infections (including sexually-transmitted diseases); health needs of child, youth and adult; and care of reproductive tract infection. She has also undertaken a process evaluation of the Growing Great Kids (GGK) Orphanage-Foster Care Training Pilot Project, and the Tuloy sa Don Bosco Street Children Project upon the request of its benefactor foundation.

Asa was holder of various professorial, academic and administrative chairs, namely the Fr. William L. Hayes, SJ Professorial Chair in Social Services (2008-2010; 2002-2003), the Concepcion Garcia Zaide Academic Chair in Women's Studies (2007-2008), the Dr. Aurelio Calderon Sr. Academic Chair of Philippine-American Relations (2006-2007), the Professorial Chair of Health Social Sciences (2004-2006; 1995-1998), the Don Eduardo Cojuangco Sr. Administrative Chair in Liberal Arts (2003-2004), and the Go Kim Pah II Professorial Chair of Liberal Arts (1999-2002). Her professorial papers delved on alternative care for trafficked children; transdisciplinary research on dengue; the role of the 'community' in the Community Justice for Children in Conflict with the Law; the social capital or social liability when GOs and NGOs network; the Philippines' comparative advantage in the area of caregiving; street children and their families, as well as organizations working with street kids; religions and social accountability; the politicization of intellectuals; and health needs of children, youth and adults. These different chairs reflect the diversity of her research themes, thrusts, and subjects since she started her academic career in 1976. In the last three years or so, (and although already retired), Asa, as DLSU-Social Development Research Center (SDRC) Research Fellow, was principal co-investigator of a 3-year co-funded action research project by the Australian Department of Foreign Affairs and Trade (formerly AusAID) and the United Nations Fund for Population Activities on the sexual and health needs of women with disability. This was a collaborative project with the University of Melbourne. DLSU-SDRC led the local project team, in partnership with the University of the Philippines Women's Studies Center Foundation, Likhaan Women's Health Center, and WOWLEAP (an organization for people with disability). Asa looks forward to supporting and sustaining the ties with women with disability that this project has established.

She is a member in good standing of several professional organizations such as the Philippine Sociological Society, the National Research Council of the Philippines, and the Pi Gamma Mu (International Honors Society in Social Science). She is a member of the Board of Directors of Love 146 Philippines, which she once chaired. Love 146 Philippines is an organization that seeks to end child trafficking and exploitation.

In recognition of her extensive experience and expertise, she has had numerous research and consultancy engagements that were supported by grants from various local and international government and non-governmental agencies which include the following: World Health Organization, International Development Research Centre, Joint United Nations Programme on HIV and AIDS (UNAIDS) Geneva, United Nations Children's Fund, Southeast Asia Representative Program, International Labor Organization, Helen Keller Foundation, Ramon Magsaysay Foundation, United States Agency for International Development, Danish Red Cross, World Bank, Ford Foundation, UNAIDS Philippines, Philippine National Red Cross, Council for the Welfare of Children, Department of Health, and Consuelo Zobel Alger Foundation. Among her most recent projects are: "Sexual and Reproductive Health of Women with Disability in the Philippines: Building Evidence for Action" funded by the Australian Agency for International Development and the UN Fund for Population Activities; "Care to Teach: Training NSTP Educators of Five Foundation for Adolescent Development (FAD) Partner Universities on Adolescent Reproductive Health" funded by the Philippine Center for Population and Development; and "Migration and HIV in the GMS," funded by the Asian Development Bank. She has published many of her research works as book chapters and as journal articles in *Taylor & Francis Online*.Asa has co-authored with the University of Melbourne research partners, articles on the different issues and aspects that surfaced from the project on women with disability, which include sexual and reproductive health services for women with disability, the participatory action research of the project. These articles have reached wide readership as evidenced by several citations reported by www.researchgate.net.

She considers research not as a task or a requirement (especially for promotion) but something inherent in the teaching career or professional growth. More importantly, she sees research as an integral part of one's life journey that can open countless possibilities and opportunities for success that can offset occasional failures. With the right attitude, budding young researchers will have no regrets but derive guaranteed joy at having contributed knowledge that pursues the truth and benefits human society.

Asa, who first joined DLSU in 1976 as an Instructor, retired from full-time teaching with the rank of Associate Professor in January 2014. Shortly after retiring from DLSU, she was wooed by the Sisters of the College of the Holy Spirit Manila (CHSM) to serve as president of CHSM (where she received 13 years of basic education formation) in fulfilling its vision-mission for the 21st century. Despite the demands of her job at CHSM, Asa continues to serve as a Research Fellow of the DLSU-SDRC, one of the research arms of the College of Liberal Arts.

UNWAVERING IN FAITH

Reflections on a life with Asa Marco

by Ms. Connie Jan Maraan

The way I remember it, Asa and I first bonded seriously after the 1986 EDSA Revolution when we attended sessions of the Commission that Cory Aquino formed to rehabilitate the Philippine Constitution. There, we cheered on one of our own, former CLA Dean Wilfrido Villacorta, a friend we were all too happy to see put theory into practice. But also, for the purpose of this anecdote, we went to indulge in watching Commissioner Edmundo Garcia, ex-seminarian and Amnesty International convenor, who had championed the cause of the Timorese in their struggle for independence. He was a dream to listen to, being such an eloquent speaker on the floor. As not all women would have found such a figure exciting to follow, he sealed our friendship, and we were at once fangirls traveling to the ends of the earth (more or less the distance from Taft to the Batasan), taking time out from research to glimpse our idol at work. (Since that time, Asa's tastes have veered more toward officers and gentlemen, the nation's valiant defenders, still very much among the principled lot.)

Probably what has impressed me most about Asa is her ability to see the best in people, especially those who can be extremely difficult. I have witnessed her, sometimes to my own inconvenience, show not maximum tolerance but instead genuine concern and accommodation for those whom most people find irritating, obnoxious, and unbearable. (This, come to think of it, might also explain why she has remained my friend for so long.) She truly lives the teachings not only of Catholicism but of St. John Baptist de La Salle, in nurturing and caring for those who need it most, and when others would not even bother.

But this is not to say that she can be described as someone solemn. Far from it. Those who know her well, or who have worked with her, are probably familiar with her irrepressible giggles, which are triggered by the silliest things. Moreover, what is endearing about Asa is her ability to laugh at herself in spite of her station—her willingness to appear daft and, in effect, to lead others to let down their guard. Our theme song for the longest time has been "The Sound of Music," when the hills come alive with the trilling of our falsetto voices.

And like a child, she opens herself to adventure and the unknown, happy to brave the chaos and revelry of Binondo to meet a fortune-teller on Chinese Lunar New Year. Recently, our health was assessed by a practitioner of Eastern alternative medicine, and without the benefit of a consultation room, we were privy to each other's diagnosis. When Sister Antonia told me, "Oh, you will have a long life!", Asa—who had been assessed first—quickly asked, "Sister, what about me! Why did you not say I will also have a long life?" Our healer responded by taking Asa's palm into her hand once more, and telling her, "You—you must take good care of yourself."

Those would have been my words exactly. For people who know Asa are aware that she does not fear taking risks, and too many times puts herself in harm's way. Such is her faith in her God, always unwavering. And constant as well, however undeserving, in those blessed to be called her friends.

Start Them Young: Writing Workshops for Children and Teens

Established in 1991, the **Bienvenido N. Santos Creative Writing Center** (**BNSCWC**) continues to be at the helm of De La Salle University's effort to preserve the tradition of excellent creative writing and research in the country. It is one with DLSU in the belief that quality writing is best cultivated in the spirit of vital engagement with tradition and innovation—decisive moments in the making of a nation's literary and cultural heritage.

Founded in honor of the late Filipino-American writer Bienvenido N. Santos, the Center provides programs that serve as venues for the academic community to critically and creatively explore the writing process. At the forefront of this exchange are highly respected and award-winning writers who are invited both from within and outside of DLSU to share the techniques of their craft in workshops, lectures, conferences, and literary readings.

The Center keeps abreast with the interplay of the national and international literary environment as it sees itself playing an important role not only in enriching the La Sallian community's cultural life but the larger community as well. It has actively participated in literary festivals and hosted foreign writers in the interest of learning more about other cultures' literary traditions and developments. It is also committed to serving the local community's cultural life through programs and activities that contribute to the dynamic production of Philippine writing.

Since 1991, the Bienvenido N. Santos Creative Writing Center has been organizing various kinds of writing workshops, whether in its homegrown campus, for a community, or even on a regional or national scale. It seeks to be at the forefront of De La Salle University's efforts to enhance and sustain the tradition of excellent creative writing and humanities research in the country.

Young people have stories, and something to say, too. In this digital age, they use technology to write narrative tidbits, post images, and share reactions. Blog, Facebook, twitter, and Wattpad are some of the platforms they are attuned to. The democracy of expressions, however, must be supported by the power of the language. The young must know how to express words with clarity and grace, seasoned with salt.

On 22 March 2014, the Center organized *The Young Writers Workshop for Children of DLSU Faculty and Staff.* This workshop

targeted kids aged 9-17 years. Its basic objectives were: To help young writers in honing their basic skills in thinking and writing; nurture their creative spirit and self-expression; and provide a supportive literary and creative community for young writers.

This initial workshop attracted sixty registered participants. As a service to the Lasallian community, it did not charge any registration fee. The workshops were divided into three age groups: 9-12, 13-14, 15-17. The day session was split into two genre foci: fiction writing in the morning and nonfiction writing in the afternoon. A storytelling hour also occurred in-between the workshop sessions.

The facilitators were experts in fiction and nonfiction: Carla Pacis and Genaro Gojo-Cruz (Age Group 9-12), Dean Francis Alfar and Katrina Stuart Santiago (Age Group 13-14), and Timothy Montes and John Iremil Teodoro (Age Group 15-17).

Pacis, Gojo-Cruz and Montes taught with the DLSU Literature Department. Pacis is an award-winning writer, well-known for her books for young adults and children such as *A Sea of Stories. Tales of Sulu; Birdflight; Enrique El Negro; Of Jars and Weaves, Terraces and Beads: Icons of Our Living Culture*, among others. She is the founding member of Kwentista ng mga Tsikiting (Kuting). Gojo-Cruz is an award-winning writer of stories for children. His children's books include: *Ang Lumang Aparador ni Lola; Si Nanay Mining at ang Tatlong Kuting; Bahaghari; Ang Dyip ni Mang Tomas*; and *Mahabang-mahabang-mahaba*; among many others. Montes has a collection of short stories entitled *The Black Men*, and he has received literary awards including the Don Carlos Palanca Awards for Literature and the Writers Prize from the National Commission for Culture & the Arts.

Alfar, Santiago and Teodoro served as guest experts and facilitators. Alfar is known for his works of speculative fiction, published and anthologized both here and abroad. He has ten Don Carlos Palanca Awards for Literature including the Grand Prize for the novel *Salamanca* and the Manila Critics Circle's National Book Awards for the graphic novels *Siglo: Freedom* and *Siglo: Passion*. He edits the *Philippine Speculative Fiction* series. Santiago is journalist and essayist who writes for *Manila Times*. Her book *Of Love And Other Lemons* is a collection of personal essays. Teodoro is poet, fictionist, essayist, and playwright in Kinaray-a, Filipino, English, and Hiligaynon. He is the author of *Kung ang Tula ay Pwedeng Pambili ng Lalaki*, *Pagmumuni-muni at Pagtatalak ng Sirenang Nagpapanggap na Prinsesa*, and *Anghel sang Capiz*, among many others.

That same year, the National Book Development Board (NBDB), through its deputy executive director Ms. Camille dela Rosa, approached the Center for a possible collaborative workshop for young adults as part of its literary festival. Thus, on 29 November 2014, the Center, in partnership with NBDB, held the Nonfiction Writing Workshop for Teens.

The workshop sought to assist the teens in developing basic creative skills and fine techniques in writing a creative nonfiction work (e.g., personal essay, journal or blog entry). The beneficiaries were teens belonging to the age group of 13-17 years. The call was open for parents to register their kids within a certain period. A total of 89 responded. Once again, the workshop did not charge any registration fee.

The facilitators were composed of DLSU faculty members Carla Pacis and Genaro Gojo-Cruz. Susan Lara served as guest expert and facilitator. Lara is a writer of fiction and nonfiction. She garnered the National Book

Award for her collection *Letting Go and Other Stories*. She served as the Director of the prestigious Silliman National Writers Workshop in 2013-2014.

Writing workshops across the country continue to be a major influence on the development of emerging wordsmiths and their creative practice. In their modest ways, the Young Writers Workshop and the Nonfiction Writing Workshop for Teens have afforded an opportunity for promising young writers based in Metro Manila to gain from experts a few tips and learning points to improve their writing skills and abilities. They have also provided the young writers a forum to exchange views with their peers. The Center's endeavor is a worthy start, and perhaps in the future, writing camps can be designed to ensure more training in the craft, and a longer time given for the young to learn well the significant art of good writing.

Live Green: *The DLSU No Impact Experiment*

There are two things that can perhaps save the world.
One would be the mastery of one's kindness to oneself and a big heart.
And the other would be understanding your passion for place,
for where you live and really loving the place that you live in.

— **Peter Warshall**, *Whole Earth Catalogue*

On 22 August 2013, the Asian Development Bank (ADB) hosted a one-day seminar entitled *Redraw The Line* to promote awareness of climate change and environmental sustainability. This seminar gathered participants from various sectors, disciplines and industries across the country, including business, advertising, media, education, entertainment, NGOs, LGUs, among others. It was a call to community action, an exhortation to change our behavior towards the environment, and to harness people to engage in activities that would seek to reduce or eliminate environment impact. This included an invitation to companies and institutions present during the event to join in a communication campaign project aims at reducing carbon footprint in communities—the *No Impact Project.*

The *No Impact Project* originated in the United States, developed by former communications consultant Colin Beavan

whose family had engaged in a year-long experiment of living a zero-waste lifestyle in New York City. Beavan believed that transformation in individual behavior and lifestyle would eventually result in cultural change and political engagement. His ideas were famously disseminated in blogs, book, film, and other forms of mass and social media. In 2009, the non-profit *No Impact Project* was established.

The Bienvenido N. Santos Creative Writing Center, partnering with the Campus Sustainability Office (CSO) and the College of Liberal Arts Research and Advanced Studies (CLA-RAS), with the support of the Office of the Vice Chancellor for Research and Innovation (OVCRI), conceived of engaging the whole Lasallian Community in having its own No Impact Program. The Asian Development Bank and The Media Alliance generously provided the training and the toolkit needed to set up and implement the program. Thus, on 24-30 March 2014, the first *DLSU No Impact Experiment* was organized in the Taft campus. Subsequently, a second one was held on 23-29 March 2015.

In a larger picture, *DLSU No Impact Experiment* was in line with the DLSU vision-mission and the key result areas of the university's environmental sustainability policy. It built on the efforts initiated by the Lasallian Network in working towards the realization of carbon-neutrality in the communities—the Project Carbon Neutral (PCN) of De La Salle Philippines. On October 21, 2013, the President's Council approved the DLSU Environmental Sustainability Policy, identifying three key result areas: Education for Sustainable Development, Sustainable "Green" Campuses & Facilities, and Climate Change Adaptation and Resilience.[1]

DLSU No Impact Experiment supported existing DLSU initiatives and sustainability actions, which included, waste management and recycling program (e.g., reuse of scratch papers, recycled water for plant watering and water treatment in restrooms, sachet recovery project, collection of electro-wastes); energy conservation (e.g., Daily Green Hour, installation of LED lamps); and the "greening" endeavors on the campus and its facilities (e.g., pocket gardens, water fountains, trash segregation, Toward Zero Plastic, No Styro, CLAYGO).

DLSU No Impact Experiment sought to further raise environmental awareness in the Lasallian Community by promoting specific challenges and small acts/steps which our community can adopt as everyday habits that would work towards the reduction or elimination of environmental impact, the protection of our green planet, and the enhancement of a quality and healthy lifestyle.

Our "brown" habits would then transform into "green" practices.

1 In AY 2015-2016, under the leadership of Br. President Raymundo Suplido, FSC, the DLSU vision-mission was revised to include the phrase "attunement to a sustainable Earth."

The experiment entailed a considerable promotion and media campaign, enlisting a group of volunteers—from the Lasallian Brothers and the administration to the students, from the outsource personnel to the alumni. The volunteers would need to participate in the self-assessment activity series as a way to evaluate the impact of the experiment. A *DLSU No Impact Experiment* Facebook page was set up to encourage the volunteers to post selfies and reflections of their small acts, in order to elicit public awareness, and as a means to "recruit" more volunteers to participate in the program.

Each day's theme and challenge for the volunteers covered the following:

Day/Theme	Suggested Small Steps
Monday: TRASH Our Challenge: Waste Not	Go paperless. Print double-sided. Or don't print. Rid your life of paper towels. Bring a used sachet for the sachet recovery bin. Dispose of PET bottles and aluminum cans in the proper bins. Use reusable eco bags and containers.
Tuesday: TRANSPORTATION Our Challenge: Burn Calories	Walk. Take LRT/MRT, bus or jeepney. Carpool with friends.
Wednesday: FOOD Our Challenge: Eat Healthy	Drink local, eat local. Eat vegetables. Eat less meat. Order just enough food. Or order a half portion. Love food. Do not leave crumbs for the "duende."
Thursday: ENERGY Our Challenge: Reduce Energy Use	Take the stairs. Unplug electricity when not in use. Google less. No TV. Use laptop/tablet only for work. Observe Daily Green Hour.
Friday: WATER Our Challenge: Save Water	Finish your drink. Bring your own tumbler or mug. Don't buy bottled water. Turn off tap when soaping hands or brushing teeth. Run water gently when needed.
Saturday: GIVING BACK Our Challenge: Share	Pick up a trash. Plant a tree. Give time. Perform random acts of kindness. Join eco-advocacy campaigns. Or make contributions. (e.g., Haribon, Plastic-Free Philippines, WWF Philippines, Marine Wildlife Watch of the Philippines)
Sunday: ECO-SABBATH Our Challenge: Rest	Pray and be grateful. Don't use any energy-consuming device. Spend time with family & friends. Gaze at the sea or a tiny flower—and marvel. Read a good book. Sleep well.

To complement the aforementioned program of steps and challenges, other events were organized in the university, such as round-table discussions on climate action, talks on local food or nature in art, cultural shows, exhibits and fairs, and bird-watching tour, among others. DLSU partners also included the University Museum, Libraries, and the Office of the Vice President for Administration.[2]

For instance, the DLSU Libraries held *Nature in Print: A Book Exhibit on Nature and Environment* in the Learning Commons, displaying posters and various titles that dwell on nature and the environment especially in the local settings. The Campus Sustainability and the College of Liberal Arts Research and Advanced Studies sponsored a round-table discussion on the theme "KAPWA KALIKASAN: Nature as Person and Fellow Being." A statement from the concept paper read:

Given the current rate of environmental destruction and the disasters that we experience because of it, it is now imperative that we start changing this view about Nature. Perhaps, if we treated it as a person, acts for the care of the environment will come more easily to us and we can infuse our everyday life with habits that will promote a greener future. We can no longer treat this issue separately from our day-to-day lives. We now have to understand that environment care can be integrated into everything that we do, from eating to sleeping, to writing our papers for our class requirements or journal publications. If Nature is *kapwa*, then it is a fellow-being that deserves our concern, and we have to be mindful of it, no matter what we do.

Modest though its effort might be, the *DLSU No Impact Experiment* hopes that it has instilled in the DLSU community a greater awareness of carbon footprint reduction, and a renewed love for our home, the Planet Earth. As the *Laudato Si' Manifesto* declares, "We look for solutions not only in technology but in a change of humanity...to replace consumption with sacrifice, greed with generosity, wastefulness with a spirit of sharing, an asceticism which entails learning to give, and not to simply give up. It is a way of loving, of moving gradually away from what I want to what God's world needs."

2 In 2016-2017 the *DLSU No Impact Experiment* was finally housed under the Office of the Chancellor; and organized by the Campus Sustainability Office (CSO), the College of Liberal Arts Research and Advanced Studies (CLA RAS), Bienvenido N. Santos Creative Writing Center (BNSCWC), the Office of the Vice Chancellor for Research and Innovation (VCRI), and the Office of the Vice Chancellor for Administration. Partner DLSU units and organizations included the Office of Lasallian Missions, COSCA, DLSU Libraries, DLSU Museum, Green Media Group, among others.

Aid Choices in Decentralized Contexts: Working with Partner Systems to Improve Service Delivery

Dr. Francisco A. Magno, Project Director
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Introduction

For the period covering AY 2013-2014 to AY 2014-2015, the JRIG has undertaken projects commissioned by various local and international funding and development agencies. These projects focused on various subjects: the state of Philippine decentralization; community participation in public procurement; e-government services for overseas Filipino workers (OFWs); decentralization of education governance; civil society monitoring of public services; disaster risk reduction; and fostering of knowledge coalitions for open governance.

The Institute has also organized roundtable discussions (RTDs) on relevant issues. Among the topics tackled by these RTDs were governance for collective action; watershed governance; transborder health governance; performance management systems in governance; ICT tools for disaster preparedness; and the relocation of informal settler families.

Completed Projects

The JRIG has completed ten (10) projects during the period AY 2013-2014 to AY 2014-2015. These projects, some of which were undertaken in collaboration with other universities and local and government institutions, were commissioned by various local government and international funding agencies.

Commissioned by the Australian Agency for International Development (AusAID) Office of Development Effectiveness, the Institute for Sustainable Futures at the University of Technology, Sydney (ISF) conducted a detailed

The **Jesse M. Robredo Institute of Governance** (**JRIG**) is a research and training institute of DLSU. It undertakes programs, projects, and activities that are innovative and geared toward creating knowledge products, developing capacity among key stakeholders, strengthening university-community engagements, and improving the integrity, performance, inclusiveness, transparency, and accountability of governance systems.

The JRIG was initially established as the La Salle Institute of Governance (LSIG) in 2001. In October 2012, it was renamed after the late Interior and Local Government Secretary Jesse M. Robredo to perpetuate his exemplary leadership.

The Institute is a member of the Board of Directors of the Local Governance Training and Research Institutes Philippine Network. It serves as the Philippine secretariat of the International Academy of Chief Information Officers and is a member of the Association of Public Administration Schools of the Philippines. The Institute is also a member of the Transparency and Accountability Network and the Multi-Sector Governance Coalition of the Bureau of Internal Revenue and the Governance Commission; the Civil Society Steering Committee of the Open Government Partnership Philippines, and the Sustainable Development Solutions Network Philippines.

The program areas of the Institute include governance, education, environment, disaster risk reduction, monitoring and evaluation, community engagement, and project management.

evaluation of how well AusAID programs supported service delivery in countries where there was ongoing decentralization. The evaluation project, which was conducted in three stages between December 2012 and August 2013 in Papua New Guinea, Indonesia, and the Philippines, assessed the extent to which AusAID's sectoral programs have adequately considered and assessed the role played by subnational authorities. Focusing on the sectors of education, health, and infrastructure (roads, water and sanitation), it sought to provide a stronger evidence base for the design and management of programs in areas where subnational authorities play a significant role in service delivery. Consultations with stakeholders (AusAID staff, donors, academics, think tanks, civil society organizations, and staff of the Philippine government) were conducted in the City of Manila, Philippines.

The JRIG prepared an evidence-based report entitled "Political Economy of Decentralization in the Philippines" assessing the current status of decentralization in the Philippines relative to the three service sectors. The report identified the possible tensions or differences in the approach and implementation between and among key institutions involved in the decentralization process i.e., Department of Interior and Local Government (DILG), Department of Education (DepEd), and the Department of Health (DOH), among others; and the outcomes of decentralization at the regional and provincial levels, particularly focusing on best practices. The JRIG also determined the future trajectory for decentralization.

Conduct of Trainings on Community Participation in Procurement in Mulanay, Quezon

The Transparency and Accountability Network (TAN) as well as its partners, the Government Procurement Policy Board Technical Support Office (GPPBTSO) and the members of the Inter-Agency Steering Committee, has committed to the institutionalization of community participation in procurement through the project entitled "Improving the Quality and Responsiveness of Public Spending in Poor Communities through Localized Procurement Reform."

Designated by the TAN to be one of the academic partners in the implementation of a training program on community participation in procurement, the JRIG prepared a roll-out training work plan, including the modules, and session guides on local government unit (LGU) procurement, observers' guide to public procurement, social accountability, and resource mobilization in the selected barangays of the municipality of Mulanay, Quezon. The Institute handled the training program from conceptualization to implementation. It also undertook the identification of qualified trainers who attended the Training of Trainers (ToT) on Community Participation in Procurement, Social Accountability and Resource Mobilization. The Institute likewise conducted a pre- and post-test of participants to assess the effectiveness of the training program. The JRIG team submitted its proposed plan/strategy for the institutionalization of community participation in procurement at the government level.

E-Government Services for Overseas Filipino Workers

This study was supported by the National Research Council of the Philippines, Department of Science and Technology. The JRIG prepared a report on the different e-government services offered by key institutions and how they are used by overseas Filipino workers (OFWs). It likewise drafted a policy note on the provision of e-government services to OFWs.

The project is deemed significant to science and technology in that it examined the planning and institutional processes that affect and go into the design and provision of e-government services for OFWs so that the latter can effectively transact with government and enhance their contributions to the economy as well as ensure their social well-being.

Policy Development and Knowledge Hub for Decentralized Education

This project was funded by a grant from the Asia Foundation with the support of AusAID under the Coalitions for Change Program. The project identified the gaps and weaknesses in the existing governance systems and processes for promoting local participation and accountability, and improving performance in the design and implementation of investment programs for basic education.

To generate policy inputs, a series of policy workshops and knowledge dialogues was organized with key stakeholders, including representatives from the DepEd. DILG, Department of Budget Management (DBM), Leagues of local governments (e.g., Union of Local Authorities of the Philippines (ULAP), League of Provinces of the Philippines (LPP), League of Cities and League of Municipalities of the Philippines), civil society, private sector, academe, and media. A draft policy in the form of a Joint Memorandum Circular of the DepEd and the DILG was developed with the aim of meeting the twin criteria of political acceptability and technical soundness. The draft was submitted for public discussions.

Institutionalizing Civil Society Monitoring and Assessment of Public Service Delivery to the Poor

This three-year project was supported by the Institutional Development Fund of the World Bank. Through the development of knowledge partnerships with universities from the different regions, specifically, St. Paul Philippines, Bicol University, Silliman University, University of San Carlos, Central Philippine University, and Mindanao State University, the project contributed toward enhancing the capacity of civil society organizations and government agencies to undertake joint government-civil society monitoring and evaluation of local public service delivery, especially to the poor.

The project established a local multi-stakeholder knowledge partnership in eight municipalities and enhanced the capacity of the local knowledge partners. Of the eight local partner-municipal governments, two —Malungon, Saranggani, and Lake Sebu, South Cotabato—had issued their respective executive orders to sustain the gains from the project and replicate the monitoring initiatives.

The other outcomes of the project include: the establishment of a National Advisory Committee; development of training modules and the conduct of capacity-building sessions; identification of sites and services to monitor; and stocktaking and sourcebook production.

Enhancing Community Planning and Disaster Preparedness in Abra

Undertaken in partnership with the Concerned Citizens of Abra for Good Government under the Philippine-Australia Community Assistance Program managed by the Asia Foundation, the project facilitated the capacity-building and empowerment among barangay officials, women, youth, and senior citizens in the community through the acquisition of planning and facilitation skills, and barangay resolution and ordinance-making. It resulted in the formulation of disaster risk reduction and management (DRRM) plans in the barangays of Sta. Rosa and Cabuloan. These are the first two barangay DRRM plans formulated with people's participation in the province which their respective barangay councils enacted into ordinances.

Fostering Knowledge Coalition for Open Governance through Engaged Universities

Supported by the Department of Foreign Affairs and Trade of Australia, the project sought to address the problem of weak transparency and accountability in the implementation of local development programs by studying how universities can channel their

community engagement programs through participation in open governance initiatives.

A series of regional dialogues was conducted in Naga City, Baguio City, Iloilo City, and Cagayan de Oro City where senior officials, faculty, and community service administrators of local colleges and universities shared the insights and gave their inputs relative to the need to institutionalize incentives and capacity development to foster university-community engagement.

The knowledge dialogues with the universities from the different regions, as well as policy discussions with the Commission on Higher Education (CHED) and DILG reveal that meaningful engagement of universities can transform them into knowledge partners in promoting open governance, especially as regards disaster risk reduction and management and the roll-out of the Seal of Good Local Governance, Grassroots Participatory Planning and Budgeting, Community-Driven Development, and Transparency and Accountability Assessment Tool.

Climate Change Education for Sustainable Development

The project involved the monitoring of training activities on the integration of DRRM in the curriculum of pilot schools in two of the DepEd school districts in Tacloban City that were devastated by typhoon Yolanda. The monitoring and evaluation report was submitted to the United Nations Educational Scientific and Cultural Organization (UNESCO). It will be used to strengthen capacity-building efforts to institutionalize school-based DRRM in the Philippines.

Empowered Participatory Governance towards Progress in North Cotabato Communities

The project was pursued in cooperation with the Fundacion Accion Contra el Hambre (ACF) and supported by the European Commission. It built the capacity of LGU officials and empowered civil society organizations (CSOs) in five (5) municipalities in the province of North Cotabato to improve the quality of local governance and the delivery of basic services, and to deter corruption through participatory planning, budgeting, and monitoring. A trainers' workshop with CSO leaders was conducted to roll out the training programs in the bara ngays.

LGU Capacity and Cooperation in Disaster Risk Reduction and Management and Climate Change – Phase 1

The project investigated the potential of inter-local collaboration to improve local DRRM. It involved 43 LGUs in the province of Iloilo. With support from the CHED, the project was undertaken in partnership with DILG - Region 6. The findings of the study were disseminated to Iloilo LDRRMO through an action-planning workshop.

Ongoing/Continuing Projects

Apart from the completed projects for the period, the JRIG continues to implement/ undertake the following projects

- Local Government Capacity and Cooperation in Climate Change Adaptation and Disaster Risk Management – Phase 2 (funded by the CHED-Philippine Higher Education Research Network)
- Building Capacity for Open Data in Developing Countries (supported by the World Wide Web Foundation)
- Institutionalizing Civil Society Organization Participation in Local Planning, Budgeting, and Monitoring (supported by SEAOIL Foundation, Inc.)

Plutopia: A Web-based Online Game that Teaches Social Accountability and Promotes Good Governance

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Figure 1: Plutopia Game World

Formerly called the Advanced Research Institute for Computing, which was established in 1994, the **Advanced Research Institute for Informatics, Computing and Networking** (**AdRIC**) is the research unit of the College of Computer Studies. Its mandate is to pursue the research ideals of the College, that include the following: setting the directions and priorities of research activities undertaken in the various fields of computing; encouraging research and development projects consistent with identified thrusts and priorities of the University; and seeking collaborative ventures with partners in industry, government, and academe in the service of society through research.

Introduction

The Affiliated Network for Social Accountability in East Asia and the Pacific (ANSA-EAP) is at the forefront in the promotion of social accountability towards effective and accountable governance. The ultimate goals of social accountability include improving public service delivery, protecting people's rights, and enhancing the quality of life of the citizens. One efficient way of achieving these objectives is to organize and enable citizens to engage

governments in a sustained and constructive way for them to exact accountability from public officials and decision-makers.

In 2009, ANSA-EAP partnered with the De La Salle University Game Lab, which is under the auspices of the AdRIC in collaboration with the College of Computer Studies to develop a computer game that can help introduce the basic concepts and principles of good governance and social accountability to young people. The computer game has been envisioned to serve as a learning material for the ANSA-EAP's capacity-building initiatives.

Plutopia

Citizen awareness and involvement are core approaches in ensuring the development of the East Asia and the Pacific regions. Plutopia's game philosophy is anchored on the belief that social accountability can be achieved through the effort of citizen groups to hold government officials, politicians and service providers responsible for their decisions, actions, and projects.

The project team developed an online community that is immersed in a massive, multiplayer online game (MMOG), which means that it can support a large number of players simultaneously in the same virtual site. The online game aims to instill among its community members the core values of awareness and involvement, which are the foundations of social accountability.

The use of online games was seen by the ANSA-EAP as a potentially effective vehicle for teaching social accountability to as many players as possible while these players enjoy the challenges and fellowship that the game offers.

In designing the game, the project team emphasized the value of community and community involvement. It introduced basic social accountability tools and sought to increase social awareness and concern. The project team also provided venues for players to network and collaborate with different people in the community.

Plutopia 1.0. This first version of the online game was disseminated as an online game in Facebook, which is one of the most popular social networking sites. Individual users were allowed to adopt characters called "avatars," which they personalized online. By assuming the personalized avatars, they interacted with other online players with the end goal of improving their community. Players of this initial version were encouraged to give their comments and suggestions toward improving the way social accountability and good governance messages could be conveyed to users.

Plutopia 2.0. This version, a take-off from the initial game developed, incorporated the comments and suggestions received from Plutopia 1.0 players. Considering that the main strategy of ANSA-EAP and the DLSU Game Lab team was to develop mini-games around the specific activities in constructive citizen-government and citizen monitoring of government and integrate this technique into the overall Plutopia game environment, the project team, thus, developed modules for classroom-based learning using the Plutopia mini-games and environment. Focusing on key concepts/topics such as active citizenship, good governance, constructive engagement, and citizen monitoring of government actions and performance, the project team produced Plutopia 2.0.

Objectives of the Project

This collaborative project endeavored to develop an online game that would introduce social accountability and good governance concepts in an elementary school setting. It created modules in the form of Plutopia computer games for classroom-based learning that focuses on grade school students. The project specifically sought to:

1. introduce the idea of social accountability and good governance to selected pilot primary school educators and their pupils, and thereafter identify a number of educational learning module developers;

2. develop classroom-based learning modules on active citizenship, good governance, and social accountability, using Plutopia 2.0;
3. conduct pilot runs of the Plutopia-based learning modules among selected upper grade school students; and
4. capture the collaboration between the ANSA-EAP and the DLSU Game Lab team (tale, tool, social accountability mainstreaming technique) and finalize and package the Plutopia modules and related materials for classroom-based learning.

What is Plutopia?

Plutopia is a web-based massive multiplayer online game (MMOG) for Facebook. A joint project of the DLSU Game Development Lab under the auspices of the AdRIC and in collaboration with CCS, Plutopia is the first Lab project that allows the DLSU Game Lab team to receive feedback from an actual client, the ANSA-EAP. The game developers considered the preferences of the ANSA-EAP while fulfilling the design specifications and technical considerations of the Game Lab.

The project enables the ANSA-EAP to explore another avenue of getting its message of social accountability and good governance across the young public. Compared to traditional efforts of putting up a website or using flyers or print media, games and social networking sites allow the ANSA EAP to reach a different kind of audience and use a different approach in urging people to get involved and see how they can help public officials to be more accountable to their constituents.

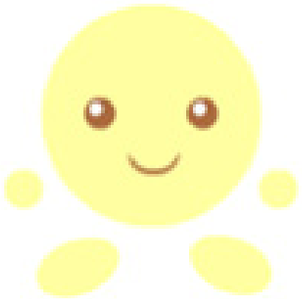

Figure 2. A Plutopian

Figure 3. Plutopian Desktop Screen

How is Plutopia Played?

The game is staged in the fictional 'world' Plutopia. The game world is designed like a small town, a community where all players belong. The characters move in a 2D-side scrolling fashion. They enter buildings inside the town to reveal new scenes or settings. There is no limit as to the number of players.

The player who is a member of a Plutopian community, cooperates with several other players as they work together to improve their community through social accountability work (S.A.W.) to monitor community projects while ensuring the well-being of every individual Plutopian through stats and items. Individually or as a community, the players strive to be recognized by the recognition society.

The player manages and can control only one character, which represents him/herself as a resident of the community. The character is formally known in the game as a "Plutopian." Once the character has been created, it cannot be deleted or changed/redefined. Each Plutopian serves as the player's virtual representation of him/herself inside the game rather than a creature that serves as his/her pet, as in the case of other online games.

The focus of the game is to help the players learn the value of social accountability by learning and experiencing how participating and getting involved in the S.A.W.-simulated inside the game will benefit the community and in the long run benefit him/herself.

The goal of the player is to learn to strike a balance in meeting the community's needs and his/her own individual interests.

The game's appeal comes from how the interaction and decisions affect the community significantly. Each player, as a member of the community, affects the condition of the game and has the chance to make a difference. The challenge of looking not only after one's self but also after one's community makes it different from other community simulation games.

Conclusion and Future Prospects

This collaborative project has surfaced lessons and insights for the Game Lab team on how online games can best be utilized for classroom-based learning. As the primary goal of the game was to introduce young players to the concepts of social accountability and good governance, future design of the online game may incorporate simulations of more real-life events that can be modeled after actual social accountability programs and activities. Dress-up features of the online game may include a personal gallery to showcase the item collection or achievements of each player.

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Developing Green Cementitious Material for a Carbon-constrained World

Dr. Michael Angelo B. Promentilla – Head, Waste and Chemicals Management Unit, CESDR

Introduction

Concrete is the most widely used infrastructure material in built environments. Built environments are generally defined as "the man-made surroundings that provide the setting for human activity, ranging in scale from buildings and parks or green space to neighborhoods and cities that can often include their supporting infrastructure, such as water supply or energy networks." With the projected economic growth, along with infrastructure development, a global production of cement is expected to be around 5.5 billion metric tons in 2030 (Worrell et al., 2009). However, a significant carbon footprint is also associated with the production of cement clinker as these cement plants emit about two metric tons of CO_2 per year which is about 5-7% of the global anthropogenic CO_2 (Damtoft et al., 2008; Shi et al., 2011). In addition, cement industries are energy-intensive as they consume around 4 to 6 *gigajoules* (GJ) per metric ton of cement clinker produced (Worrell et al., 2000; Taylor et al., 2006). Concrete made from Portland cement binder accounts for some 30% of all materials flows in the world, and is also considered second to freshwater as the most widely used commodity (Aitcin, 2000; Bentur, 2002). Thus, the environmental footprint and energy intensity associated with the production and use of Portland cement-based materials are recognized as an alarming issue toward the development of sustainable infrastructure for a carbon-constrained world.

The Project

This project was undertaken by Dr. Michael Angelo Promentilla with financial support from the ASEAN University Network/Southeast Asia Engineering

The **Center for Engineering and Sustainable Development Research** (**CESDR**) is the research arm of the Gokongwei College of Engineering (GCOE). Established in 2003, CESDR is mandated to promote, catalyze and crystallize scientific activities in Engineering sciences and technology to achieve strategic advances in complex engineering systems and firm-level technologies necessary for the sustainable development of the country. CESDR is envisioned to become a Center of Excellence in engineering research and technology innovations.

The CESDR aims to make significant contributions to the growing scientific knowledge in engineering and technology. It has engaged in experimental research and modeling of industrial systems and technologies and has facilitated the effective transfer of these technologies from the academic research community to industry and society in the pursuit of sustainable development. The Center has also endeavored to tap expertise from different fields of engineering and the social sciences in the development of scientifically rigorous, systems-oriented technological solutions to emerging complex and multidimensional challenges that are associated with contemporary environmental problems and issues.

Education Network (AUN/SEED-Net) – Japan International Cooperation Agency (JICA), and the National Academy of Science and Technology/Department of Science and Technology (NAST/DOST) Grants to Outstanding Achievement in Science and Technology, and the numerous collaborators from DLSU Gokongwei College of Engineering, Tokyo Institute of Technology (Japan), and Ho Chi Minh University of Technology (Vietnam).

Geopolymer has recently gained attention as an alternative binder for ordinary Portland cement (OPC) due to its reported low embodied energy and CO_2 footprint (Davidovits, 1994, 2002). A term originally coined by Davidovits in the 1970s, geopolymer is a kind of inorganic polymer typically formed from the reaction of alkaline solution with materials rich in reactive silica and alumina materials resulting in two- or three-dimensional aluminosilicate polymeric networks (Davidovits, 1994). It is also referred to by other researchers as alkali-activated pozzolan cements (Shi et al., 2011) to describe the alkali activation of the solid alumino-silicate raw materials in a strongly alkaline environment.

This paper presents an ongoing research at the DLSU Geopolymer and Advanced Materials Engineering Research for Sustainability (G.A.M.E.R.S.) Lab. The unit's recent works focus on experimenting with "green" materials from indigenous sources or industrial by-products with the objective of providing a potentially viable and sustainable solution for wastes management. In this study, industrial wastes such as coal ash and red mud waste, and agricultural wastes such as rice hull ash were used as alumino-silicate resources to produce geopolymer. Utilization of such wastes as sources of reactive alumino-silicate resource is proposed as a viable solution to the pollution problem and at the same time as an economical option in the design of sustainable construction materials for a carbon-constrained world. In contrast to Portland cement-based binders, the geopolymer binder uses minimally processed natural minerals and industrial by-products or wastes to provide cementitious binder with potential energy savings and reduction in CO_2 emission in the construction and building sector. However, the geopolymer technology is not the "cure-all" for material selection problem. Geopolymer products have a wide range of properties depending on the raw materials and process conditions. Its microstructure and macroscopic behavior thus depend on the geopolymer precursor present including the unwanted component in the raw materials, the type of alkaline activator or solutions, and the process conditions such as the curing environment and pretreatment of raw materials (Khale and Chaudhary, 2007; Van Deventer et al., 2012). Thus, it is important to understand the impact of mix design and process conditions on the properties of the said material to aid in the product design through a systematic experimental planning (Promentilla et al., 2016).

Ternary Blended Geopolymer

Recent works (Promentilla et al., 2014; Nguyen et al, 2014; Kalaw et al., 2016) at G.A.M.E.R.S. Lab, utilize industrial wastes such as coal ash and red mud (RM), agricultural wastes such as rice hull ash (RHA), and natural minerals such as diatomaceous earth (DE) as alumino-silicate resources for producing geopolymer-based materials. Unless properly managed, the increasing rate of generation of these industrial or agricultural solid wastes particularly in countries in the Asian region such as Vietnam and the Philippines can become an alarming environmental concern. Cognizant of this, the viability of using these waste materials to address the pollution problem while, at the same time, providing an economical option in designing a sustainable construction material based on geopolymer technology was determined. Coal-fired power industry, for example, produces millions of tons of coal ash which

is composed of about 80% fly ash and 20% bottom ash. About 750 million metric tons of coal ash per year are produced globally and only 50% of these coal ashes are utilized (Jayaranjana et al., 2014). RM is a bauxite industry waste, which is estimated to be over 2 billion metric tons worldwide (Klauber et al., 2011) while RHA is an agricultural waste from the burning of rice husk, with an estimated generation rate of over 20 million metric tons per year worldwide (Siddique et al., 2011). Thus, studies have been done to develop geopolymer-based materials with desired engineering specifications by understanding the microstructure and optimizing the mix formulation of the ternary blends of potential raw materials.

Geopolymer from a ternary blend of red mud, rice hull ash, and diatomaceous earth from Vietnam

Figure 1 illustrates a geopolymer produced from a ternary blend of RM, RHA and DE. Meanwhile, Table 1 summarizes the chemical analysis of the raw materials (Figure 2) obtained from Vietnam that were used in producing the ternary blended geopolymer. Water glass solution is used as alkaline activator for the geopolymerization. The details of the study including the method for preparing the geopolymer are discussed elsewhere (see Nguyen et al., 2014; Promentilla et al., 2016).

Figure 1. Geopolymer-based materials

Figure 2. Raw materials for the ternary blended geopolymer

Table 1. Chemical compositions of red mud (RM), rice hull ash (RHA), and diatomaceous earth (DE)

Oxides	RM	RHA	DE
Aluminum oxide (Al_2O_3)	18.98	1.12	16.63
Silicon dioxide (SiO_2)	4.52	90.90	49.61
Iron (III) oxide (Fe_2O_3)	49.90	0.54	16.81
Sodium oxide (Na_2O)	2.60	-	0.06
Potassium oxide (K_2O)	0.05	4.66	2.01
Calcium oxide (CaO)	0.87	1.41	1.00
Titanium dioxide (TiO_2)	5.62	-	1.51
Loss of ignition* (L.O.I)	16.52	0.77	9.64

* A test used in inorganic analytical chemistry, which entails strongly heating ("igniting") a sample of the material at a specified temperature, and allowing volatile substances to escape, until its mass ceases to change

Table 2. Engineering properties of geopolymer specimens

Samples	Volumetric weight (kg/m3)	Water absorption (kg/m3)	28-day Compressive strength (MPa)		Thermal conductivity (W/m.K)
			Room temp.	Elevated temp. (1000oC)	
A1 (100%RM)	1656	361.66	6.21	0a	1.2035
A2 (100% RHA)	1104	315.09	12.03	16.20	0.4713
A3 (100%DE)	1301	386.65	7.02	0a	0.9072
A4 (50%RM-50%RHA)	1473	229.16	10.01	18.25	0.4842
A5 (50%RM- 50%DE)	1572	358.13	6.12	16.22	0.5332
A6(50%RHA-50%DE)	1316	241.25	11.64	13.21	0.4994
A7 (66%RM-17%RHA -17%DE)	1608	248.04	8.22	18.22	0.6209
A8 (17%RM-66%RHA -17%DE)	1288	165.14	14.30	20.06	0.5234
A9 (17%RM-17%RHA -66%DE)	1293	320.78	9.02	14.40	0.5155
A10 (33.3%RM-33.3% RHA-33.3%DE)	1317	193.39	12.65	17.34	0.5298

[a] The specimens were broken

For example, a statistical mixture design as shown in Table 2 was used with a 15% water glass solution (by weight) to produce ten geopolymer specimens. Except for A1 (100%RM) and A3 (100% DE), an increase in compressive strength was observed in all the specimens subjected to an elevated temperature, suggesting a heat-resistant geopolymer. Response surface analysis of the experimental data was used to predict the engineering properties such as compressive strength at room temperature and elevated temperature (1000 °C), volumetric weight, water absorption and thermal conductivity. Such statistical techniques can be used in designing the geopolymer product with desired engineering properties by defining the optimal region for mix formulation of the raw materials. For example, indication from these response surface models suggests that a high proportion of RHA relative to RM and DE produce a lighter but stronger and more thermally stable geopolymer.

Micrographs of the ternary blended geopolymer (Figure 3) indicate the presence of a new phase covering and connecting the fine particles including long rods woven together around the particles. This phase, which is attributed to the geopolymer phase resulting from the reactions of alumino-silicate resources in highly alkaline condition, created stronger chemical bond that increased the compressive strength of the material like that of the hydrated cement phase in Portland cement-based materials. The microstructure (weave) caused new pores among the long rods, combined with the initial porous structure of RHA and DE, creating a highly porous structure in the matrix, thus, producing a lightweight geopolymer with relatively lower thermal conductivity.

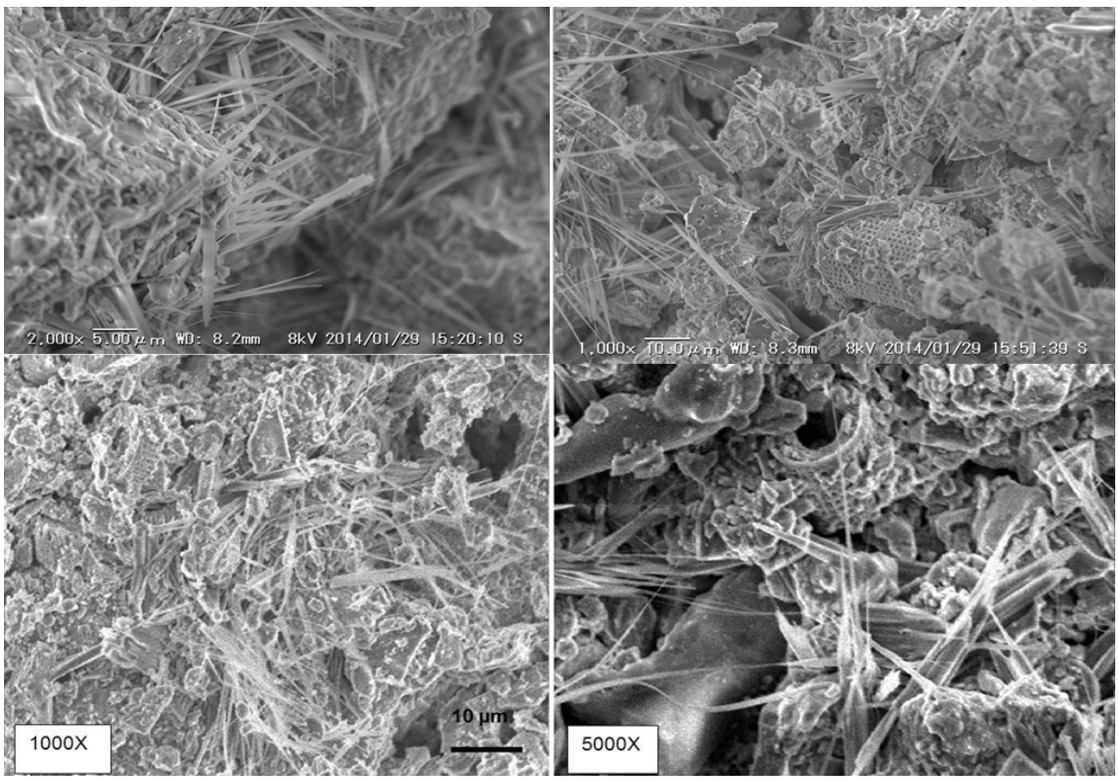

Figure 3. Scanning electron microscope (SEM) micrographs of a ternary blended geopolymer from red mud, diatomaceous earth, and rice hull ash

Geopolymer from a ternary blend of Philippine coal fly ash, coal bottom ash and rice hull ash

Table 3 summarizes the chemical analysis of the raw materials obtained from the Philippines used to produce the ternary blended geopolymer. The findings suggest that these raw materials have significant amounts of alumina and silica which make them good precursors for geopolymerization. The alkali activator used in the study was prepared from locally-available reagents at an 80-20 by mass ratio of 12 M NaOH (sodium hydroxide) solution and Na_2SiO_3 (sodium silicate or waterglass) solution (55% water, modulus = 3). The details of the study including the method for preparing the geopolymer are discussed elsewhere (Kalaw et al., 2016).

Figure 4 illustrates the microstructure of the raw materials and the geopolymer product. The globule-like morphology seen in the micrograph for CFA are known to be alumino-silicate spheres and iron-rich spheres. On the other hand, CBA particles are more irregular but are also visibly porous in nature. The bigger sizes and void spaces as seen

Table 3. Chemical compositions of coal fly ash (CFA), coal bottom ash (CBA), and rice hull ash (RHA)

Oxides	CFA	CBA	RHA
Aluminum oxide (Al_2O_3)	21.8	18.4	-
Silicon dioxide (SiO_2)	66.5	57.0	70.1
Iron (III) oxide (Fe_2O_3)	2.52	10.5	-
Sodium oxide (Na_2O)	0.50	0.6	-
Potassium oxide (K_2O)	1.49	-	1.10
Calcium oxide (CaO)	5.30	11.1	0.19
Titanium dioxide (TiO_2)	0.40	1.14	-
Loss of ignition (L.O.I)	2.18	1.07	28.6

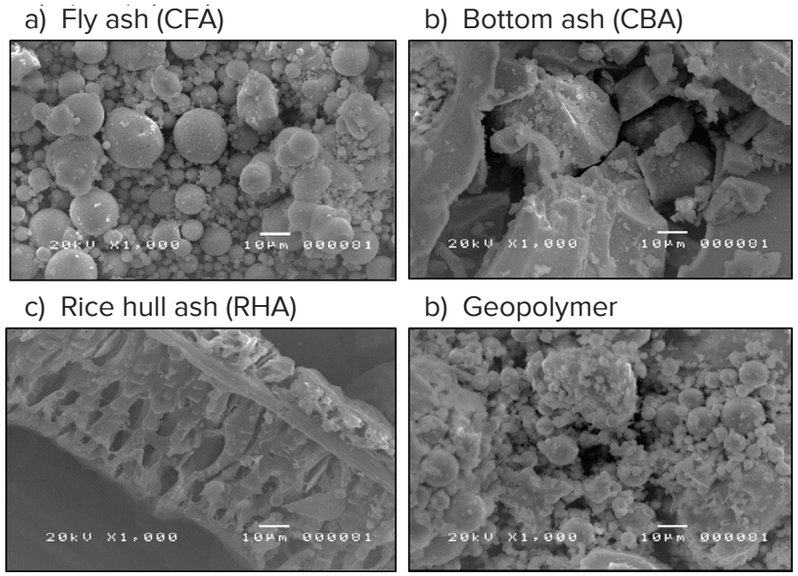

Figure 4. SEM micrographs of a ternary blended geopolymer from coal fly ash, bottom ash, and rice hull ash

in the micrograph of the RHA sample also suggest high porosity of RHA raw material. As regards the geopolymer binder, the morphological surfaces are indicative of the extent of dissolution and polycondensation that occurred during geopolymerization.

Table 4 summarizes the results of the effect of pre-curing temperature on geopolymer using the defined optimal mix formulation with target application as a lightweight moderate strength brick. These mix formulations are 95%CFA-5%RHA, 85%CFA-15%CBA, and 85%CFA-10%CBA-5%RHA, respectively. Indication suggests that samples pre-cured at 80 °C attained higher strengths, lower volumetric weight and lower thermal conductivity for all the mixes. The direct relation between lower volumetric weight and lower thermal conductivity also reveals that moisture content directly affects thermal conductivity. The computed embodied energy and embodied CO_2 of the geopolymer-based material are lower than 2 megaJoules (MJ)/kg and of 0.2 kg CO_2/kg, respectively. These values are found to be lower than those of Portland cement-based materials. For example, for pure OPC, the embodied energy and embodied CO_2 are 4.6 MJ/kg and 0.83 kg CO_2/kg, respectively. At 50% replacement with fly ash in blended OPC, the embodied energy and embodied CO_2 are 2.4 MJ/kg and 0.42 kg CO_2/kg, respectively (Hammond and Jones, 2011).

Conclusion

This paper presents an alternative construction material and a sustainable solution for waste management particularly for industrial waste such as coal ash from coal-fired power plants, and RM waste from the bauxite industry, and agricultural waste such as RHA. The binder from ternary blended geopolymer could produce a lightweight heat-resistant thermal insulating material. In contrast to Portland cement, the geopolymer binder relies on minimally processed natural minerals and industrial by-products or wastes to provide an alternative material with potential energy savings and CO_2 emission reduction in the construction sector. Further work is required, however, to improve product development to reduce the environmental footprint and strengthen its potential for commercial applications. There are ongoing studies at the G.A.M.E.R.S. Lab that aim to develop fiber-reinforced or foamed composites based on such geopolymer binder. A geopolymer-based soil stabilizer that can be used for land reclamation or road embankment is also being developed. Further investigations will also be conducted on its environmental aspects and microstructure characterization to understand its long-term performance as a green material for built environments.

Table 4. Engineering properties of the optimum mixes at 30 °C and 80 °C 24-hr pre-curing temperature.

Samples	Temperature	Volumetric weight, kg/m^3	Thermal conductivity, W/m°C	Compressive strength, MPa
95%CFA-5%RHA	30 °C	1800	0.482	10.9
	80 °C	1620	0.439	12.0
85%CFA-15%CBA	30 °C	1890	0.547	11.7
	80 °C	1610	0.409	13.7
85%CFA-10%CBA-5%RHA	30 °C	1850	0.537	17.1
	80 °C	1660	0.457	18.5

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FEATURED RESEARCHER

Dr. Elmer Jose P. Dadios

Dr. Elmer Jose P. Dadios, or "Elmer" to colleagues and friends, is a consultant on software and hardware development in the area of robotics and intelligent systems application. His research interests include artificial intelligence, evolutionary systems, fuzzy logic, manufacturing processes, neural networks, robotics, software engineering, automation and intelligent systems.

He joined DLSU in September 1996 as an associate professor. Since then, Elmer has served the University in various capacities as program coordinator of the Electronics and Communications Engineering Department; director of the DLSU-Canlubang School of Engineering, and the COE (now Gokongwei School of Engineering (GCOE)) Engineering Graduate School; research and publications director of the GCOE; associate director of the DLSU Industry-Academe Linkage Office; and research coordinator of the Manufacturing Engineering and Management (MEM) Department. He was also a member of the COE Graduate Council and the GCOE MEM Research and Publications Committee.

In May 2008, Elmer was conferred the title of University Fellow, the highest award and recognition given by DLSU to faculty members who exhibit consistent scholarly pursuit through research and publication, effective teaching performance, and exemplary modeling of the Lasallian core values.

A multi-awarded educator and scholar, Elmer has earned over 20 recognitions and distinctions from various national scientific award-giving bodies and professional organizations. Among the more recent major awards he garnered include the Achievement Award from the National Research Council of the Philippines (NRCP) and an Outstanding Scientific Paper Award for his "Analysis of Colonic Histopathological Images Using Pixel Intensities and Hough Transform" from the National Academy of Science and Technology (NAST) both in 2011. The dissertation entitled "Identifying Mass Center for Mass, and Moment of Inertia through Natural Oscillations for Full-Dynamics Control of Robot Manipulators" whose proponents he mentored, won First Prize in the 2011 Department of Science and Technology–Philippine Council for Advanced Science and Technology Research and Development (DOST-PCASTRD) Search for Outstanding Dissertation in the Microelectronics/Mechatronics for Advanced Science and Technology Category. In 2009, the thesis entitled "Decision Support System for

Agricultural Process Management" whose proponents he also mentored, won First Prize in the DOST-PCASTRD Search for Outstanding Thesis in the Microelectronics/Mechatronics for Advanced Science and Technology Category. Elmer was also included in the Department of Science and Technology (DOST) 50 Men and Women of Science and Technology. That same year, he also received the Department of Science and Technology (DOST) Scholar Achievers Award.

Elmer has been very visible in both local and international milieus, not only by attending conferences but also by sharing his expertise with colleagues and other institutions. Currently, he is the editor of the *Journal of Advanced Computational Intelligence and Intelligent Informatics (JACIII)* published by the Fuji Technology Press, Ltd. (Tokyo, Japan); editor-in-chief of the *Journal of Computational Innovations and Engineering Application (JCIEA)* published by the DLSU Publishing House; and a member of the editorial board of the *International Journal of Advanced Robotic Systems (InTech Open Access Publisher)*. He is also very active in the Institute of Electrical and Electronics Engineering (IEEE), a professional organization. He is currently a member of the IEEE Asia and Pacific (R10) Executive Committee; chair of the IEEE R10 Awards and Recognition Committee; and chair of the IEEE Computational Intelligence Society Philippines Chapter. At the national level, Elmer is the president of NERONEMECH Incorporated; and is the founder and past president of the Mechatronics and Robotics Society of the Philippines.

Elmer has also assumed various positions in the past specifically as an external assessor for the University of Malaya (Malaysia) from 2011 to 2014; book editor for InTech Open Access Publisher (Croatia); and head trainor of the Philippine Team for the FIRST Robotics Competition (FRC) held in the US, which won the Rookie All-Star and Highest Rookie Seed Award that qualified the team to participate in the FRC Championship in Atlanta, Georgia, USA.

Many local organizations have likewise benefited from his expertise particularly when he served as vice chair of the Organizing Committee of the Pambansang Tagisan ng Robotics hosted by the DOST Science Education Institute; general chair of the IEEE Humanitarian Technology Conference (HTC) 2015, and IEEE TENCON 2012 which were both held in Cebu City (IEEE HTC and IEEE TENCON are premier international technical conferences of IEEE Region 10, also referred as the Asia Pacific Region, one of the largest regional organizations of the IEEE); vice chair of the NRCP, Division 7; section chair of the IEEE Philippine section; member of the Technical Working Group for Information and Communications Technology, Presidential Coordinating Council on Research and Development, Office of the President of the Republic of the Philippines; general chair of the 13th International Conference on Mechatronics Technology (ICMT 2009); general chair of the International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment and Management (HNICEM), IEEE Philippine Section technically sponsored conferences and gatherings of professionals held in the Philippines in 2015, 2014, 2013, 2011, 2009, 2007, 2005, and 2003; and program chair of the National Electrical, Electronics and Computing Conference organized by the IEEE Philippine Section and held at the Mall of Asia Science Discovery Center in 2009.

In view of his expertise, he has been invited to speak in various symposia, workshops, and trainings sessions. His most recent speaking engagements included the IEEE Region 10 Distinguished Technical Seminar on Technologies for Humanity held in Manila; 4th International Conference on Multimedia and Ubiqitous Engineering and 2nd International Conference on Information Technology Convergence and Services; 3rd International Conference on Human-centric Computing; 5th International Conference on Embedded and Multimedia Computing in Cebu in 2010; Biomedical Computing and Engineering Technologies Research Group International Speaker Seminar Series that were held in the United Kingdom in 2010; Robotics Symposium at the Mindanao State University in Marawi City

in 2009; 3rd Rotaract Club of Metro Olongapo Information and Communications Technology Symposium held at the Subic Bay Freeport Zone in 2010; and the First Northern Mindanao Philippine Council for Advanced Science and Technology Research and Development Scholars Science Forum held in Iligan City in 2009.

Elmer is a prolific writer and researcher. He has undertaken over 40 projects as of 2015 and has authored/co-authored over 40 scientific and technical books with InTech Open Access (Croatia), and journal articles that were published in several highly reputable local and international journals such as the *IEEE Transactions on Systems, Man, and Cybernetics*, *Journal of Advanced Computational Intelligence and Intelligent Informatics* (Fuji Technology Press); *Journal of Biomedical Engineering and Technology* (Inderscience Enterprises Ltd. (online)); *Intelligent Information Management Journal*, *Scientific Research Open Access*; *International Journal of Biomedical Engineering and Technology*; *International Journal of Computer Games Technology* (Hindawi Publishing Corporation); *International Journal on Smart Sensing and Intelligent Systems* (online); *International Journal for Manufacturing Science and Technology*; *Philippine Science Letters*; *Journal of Control and Intelligent Systems* (ACTA Press); *Journal of Clean Technologies and Environmental Policy* (Springer Verlag); *International Journal of Human-friendly Welfare Robotic Systems* (KAIST Press); *International Journal of Knowledge-based Intelligent Engineering Systems*; *Journal of the Instrument and Control Engineer* (Philippine Instrumentation and Control Society); *INHINYERIYA, International Journal of Engineering*; *The Manila Journal of Science*; and *Journal of Computational Innovations and Engineering Application* (JCIEA).

On top of these, Elmer has presented and published over 200 papers on topics focusing on his areas of interest in numerous conferences, symposia and workshops held in the country and abroad. Most, if not all, of these papers, appear in the conference proceedings published by the local and international professional organizations. These include the published proceedings of the following: IEEE technically sponsored conferences; 2015 Annual Meeting and Symposium of the Philippine-American Academy of Science & Engineering (PAASE) which was held in DLSU and where he presented the "Design and Development of an Infrared-based Remote-controlled Micro Robot," an entry to the 2014 International Micro Robot Maze Competition; the 7th IEEE International Conference Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment and Management (HNICEM 2015) co-located with the 10th Engineering Research and Development for Technology (ERDT) Conference in Puerto Princesa, Palawan; 6th International Conference Humanoid, Nanotechnology, Information Technology Communication and Control, Environment and Management (HNICEM 2013); IEEE TENCON 2012 in Cebu City; 34th Annual International Conference of IEEE Engineering in Medicine and Biology Society (EMBS 2012), in California, USA; 2012 IEEE Computational Intelligence for Financial Engineering and Economics (CIFE) in New York, USA; 5th IEEE International Conference on Cybernetics and Intelligent Systems and the 5th IEEE International Conference on Robotics, Automation and Mechatronics (CIS-RAM 2011) in Qingdao, China; and the 31st Annual Philippine American Academy of Science and Engineering Meeting and Symposium (APAMS 2011) held at the University of the Philippines, in Diliman, Quezon City.

Elmer earned his Bachelor of Science in Electrical Engineering from the Mindanao State University in Marawi City, Philippines; and his Master of Science in Computer Science from De La Salle University. He holds a PhD in Manufacturing Engineering from Loughborough University, United Kingdom.

MY PERSONAL IMPRESSIONS OF DR. ELMER DADIOS

by Dr. Laurence Gan Lim

A multi-awarded and well-renowned figure in the field of engineering and robotics, Dr. Elmer Dadios has earned the reputation of being one of De La Salle University's most notable scientists. His various awards and achievements and the important posts he has held in numerous professional organizations attest to his discipline and rare and admirable ability to balance his hectic schedule, and his self-imposed standard of excellence in all his tasks and outputs. Dr. Dadios was my professor and thesis adviser when I was pursuing my master's degree. He is a polarizing figure to many of his students. He applied what we considered as the 'UP-style' of handling classes. That is, he exhorted us to come prepared to class, otherwise, we would agonizingly go through the entire period unable to grasp or understand what he was discussing. He put a premium on this requirement because he communicated in a language comprehensible only to those who have devoted hours of diligent preparation and studying for the class session. He was the one who introduced me to artificial intelligence, which had become my research interest. As a thesis adviser, he was very good at gauging the capabilities of his students. In my case, he would simply give his advice and comments regarding my output and, most of the time, would allow me to work on my own. I considered it a virtue and an advantage that he did not 'snoop around' to check on what I was doing. It somehow gave me more confidence thinking that he believed in my ability to work on my own. We now belong to different departments—I am with the Mechanical Engineering, while he remains with the Manufacturing Engineering and Management. We seldom see each other on campus and the few times that we do are during laboratory activities, IEEE meetings, or occasional tennis bouts.

I regard him as a true gentleman, a loyal and dependable friend, and most importantly, a devoted family man. Despite his busy work schedule, he always finds time for his family. He is a doting father to his children. I remember him bringing his entire family during a trip to the Netherlands in 2014 when he attended an IEEE sections congress. Despite his seemingly serious and formal demeanor, he also knows how to have fun. He loves mountain climbing and long travels around the country on his days-off. He is passionate about tennis which we both often play. He is a well-rounded and a very practical person who seems to know the solutions to any problem. I sincerely think that the University can move forward much quicker if it follows his advice on matters within his field of expertise.

I have gained many insights from associating with him for about two decades. The two most important life lessons that I learn from him are: first, know how to set aside emotions to become more objective and be able to decide or do what is right; and second, always prioritize the more important things in work and in life.

The Role and Contribution of Private Higher Education in the Philippines*

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The contrast between public vs. private higher education institutions (HEIs) rests on "a fundamental distinction between public and private HEIs and depends on how they are governed, how they are financed, and how they function" (Geiger, 1986; Levy, as cited in ADB, 2012, p. 3). According to the ADB (2012) report, "traditionally, public HEIs are owned, operated, and funded by the government, whereas private HEIs are commonly owned and run by non-state personnel such as individuals, families, companies or corporations, religious organizations, and foundations. Private HEIs typically receive little or no state funding, and instead, rely heavily on tuition and fees. Moreover, the rationale for the development of public and private HEIs is different. Public HEIs are established largely to serve the economic, social, and political needs of countries and for the public good. Private HEIs are founded to offer difference to those who seek alternatives to public higher education" (p. 2).

According to the Commission on Higher Education (CHED) (2014a), there are currently 1,643 private tertiary institutions in the Philippines vis-a-vis 656 public colleges and universities.

The preponderance of private HEIs, however, is not unique to the Philippines alone. Such growth of the private sector ownership of HEIs is also evident across many regions worldwide (ADB, 2012). In Asian economies, the trend is also similarly and widely observed.

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* A commissioned study by the Philippine Association of Colleges and Universities (PACU) in partnership with the Fund for Assistance to Private Education (FAPE) and the DLSU-Lasallian Institute for Development and Educational Research (LIDER)

Established in 1993, the **Lasallian Institute for Development and Educational Research** (**LIDER**) is the research arm of the College of Education (CED). Through LIDER, the College brings together the expertise of various educational professionals to serve the needs of the different sectors of the educational community. LIDER assumes the dual role of generating knowledge and helping solve the nation's developmental and educational problems. It responds to the growing demand for cooperative and multidisciplinary efforts to address these problems. In general, LIDER aims to contribute to nation-building by conducting research studies, training educational leaders, and developing innovative strategies and culturally relevant educational materials; provide leadership in pushing the frontiers of education by offering varied and creative programs in different disciplines; and initiate interdisciplinary research-based educational technology, human development and formation programs. It also facilitates linkages with various end-users—policy makers, funding agencies, parents, teachers, students, community leaders, and researchers.

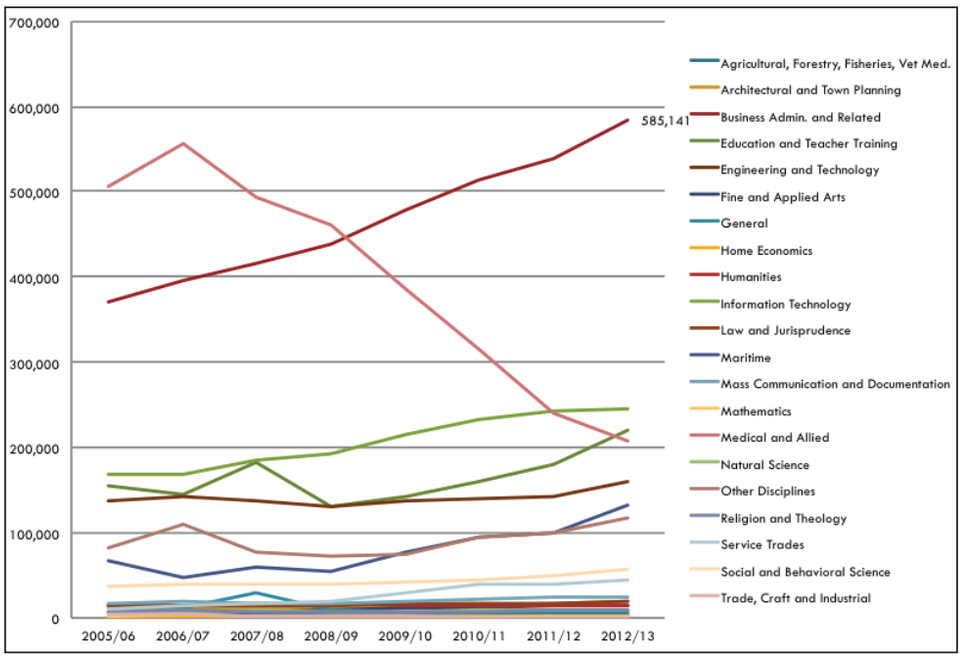


Figure 1. Enrolment in Undergraduate Programs in Private HEIs for the Period 2005-2012

The 2012 Asian Development Bank report states that "In Asia, a private higher education surge is occurring in three stages (Geiger, 1986). The first stage is peripheral private. This is seen in a country where public HEIs dominate while private higher education plays only a peripheral role. Typically, developing countries that have a history of socialism or are in the early stages of developing a higher education system follow this peripheral private pattern. The majority of developing countries in Asia fall under this category, such as Vietnam and the Central Asian republics. The second stage, which presents parallel between the public and private higher education sectors, reflects a stage of HEIs having comparable functions and status. Examples include Hong Kong, China, Malaysia, and Thailand. The third stage shows an extensive private higher education sector that includes both substantially high enrolment in private higher education and a high number of private HEIs. Japan and Republic of Korea are leading private higher education prototypes in East Asia, with consistent enrolment shares higher than 77% and institutional shares approaching 90%. Indonesia and Philippines, likewise, are leading countries in Southeast Asia in both private higher education enrolment share (70.9% and 60.9%, respectively) and institutional number (97.3% and 72.2%, respectively)" [p. 7].

Research Framework

This study sought to address the essential questions relative to the role and contribution of private higher educational institutions, specifically: (1) What are the nature and the scope of the participation and contribution of private higher educational institutions in addressing Philippine educational challenges related to access, retention, relevance, quality, and equity? (2) What initiatives and best practices for educational reforms, school effectiveness and school improvement have been adopted by private HEIs? (3) What are the economic and educational outcomes of private HEIs? and (4) How can this study rationalize the basis for establishing and advocating for the private education sector in order to clearly define its role in relation to the national educational agenda and long-term national educational strategy?

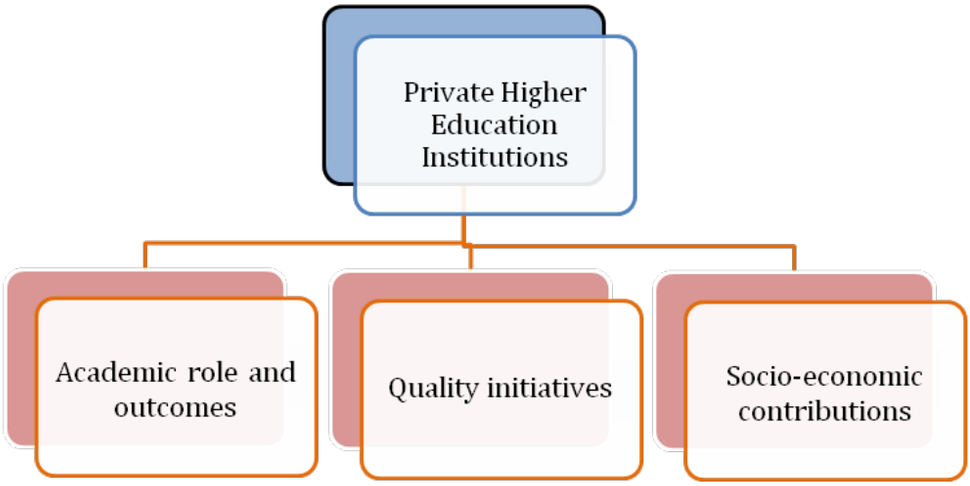


Figure 2. Conceptual Framework of the Research

Research Methodology

This study fundamentally employed a descriptive research design. Datasets were gathered based on documentary and secondary data analysis. Corollary to the secondary data analysis, a survey was conducted in 51 private colleges and universities whose respondents included university presidents, vice presidents, registrars, and research directors. The items in the research survey were based on the Organization for Economic Co-operation and Development (2009) Quality of Teaching in Higher Education questionnaire.

The questionnaire first aimed to assess the academic functions of the educational institution in the past five years. It focused mainly on the following:

(1) faculty development initiatives,
(2) curricular reform and teaching innovation,
(3) management/ organizational structure,
(4) research productivity, and
(5) quality assurance (accreditation).

The questions required a review of institutional data (i.e. faculty profile, faculty development programs, research outputs, institutional infrastructure, etc.). In some parts, the items required descriptions of recent practices in revising the curriculum and accreditation status.

Data Analysis. In the analysis of survey results, the following classifications were used to categorize schools by enrolment size. Comparable to the Carnegie classification (see Table 1), the respondent universities and colleges were classified as small, medium, large, or very large schools.

Table 1: Carnegie Classification vs. Survey Sample Group Categories

Carnegie Classification		Survey Sample Group Categories	
Very Small	Less than 500		
Small	500 – 1999	Small	Less than 1999
Medium	2000 – 4999	Medium	2000 – 4999
Large	5000 – 9999	Large	5000 – 9999
Very Large	Above 10000	Very Large	Above 10000

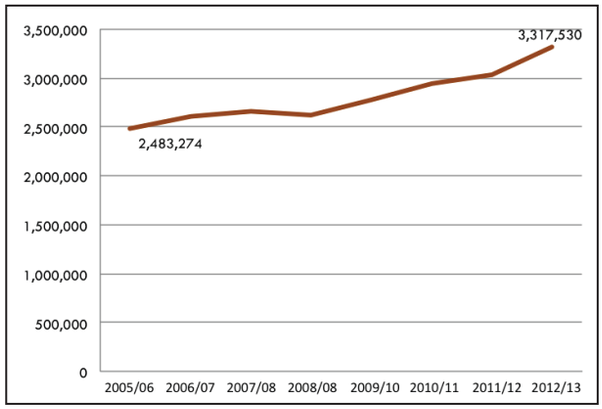
Conclusion and Recommendations

The study fundamentally raised three (3) key issues related to the role and contribution of private higher education in the Philippines: its academic contribution to the field, the initiative towards quality assurance, and its economic contributions to national development goals.

Key Issue 1: The Academic Contributions of Private Higher Education

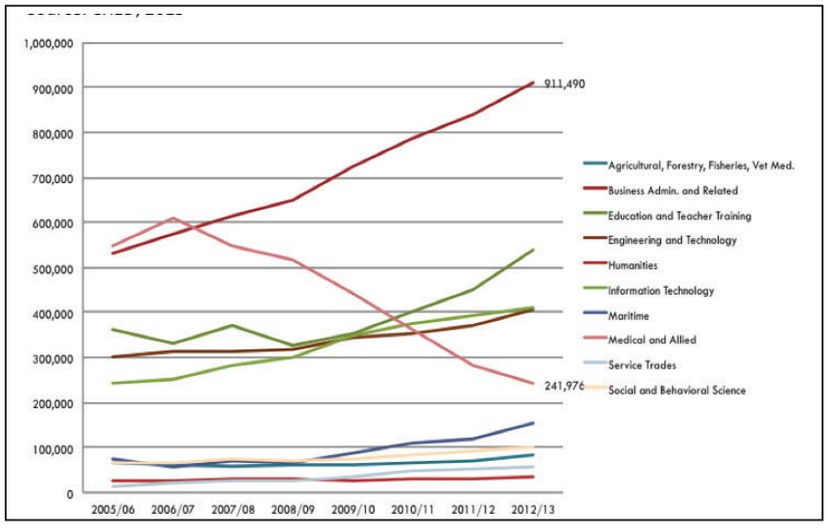
It highlighted the trifocal functions fulfilled by private colleges and universities in terms of teaching, research, and community extension. In a move to ensure quality among higher education institutions and due to the daunting nature of its supervisory role to around 1,200 private HEIs with about 2.6 million enrollees in over 900 academic programs, CHED granted autonomous and deregulated status to select and deserving private colleges and universities in line with reducing its supervisory role over HEIs (CMO No. 32, s. 2001).

Although there has been substantial debate in the classification espoused by CHED (in identifying educational institutions as autonomous, deregulated, and fully regulated institutions), the research data pointed to the disparity in the academic or educational standards between autonomous private HEIs versus fully regulated colleges and universities. In the study, it was evident that autonomous HEIs have made more substantial investments in upgrading the quality of their faculty and curricular infrastructure. More so, autonomous HEIs provided more support toward developing the capacities of their faculty for



Source: CHED (2014a)

Figure 3. Enrolment in Philippine HEIs for the Period 2005-2012



Source: CHED

Figure 4. Top Tertiary Programs Based on Enrolment (SY 2005-2012)

research and teaching. The data likewise offered an apparent predominant rationale for curriculum review as a process that is fundamentally driven by external regulation, a process initiated more frequently by autonomous private colleges and universities.

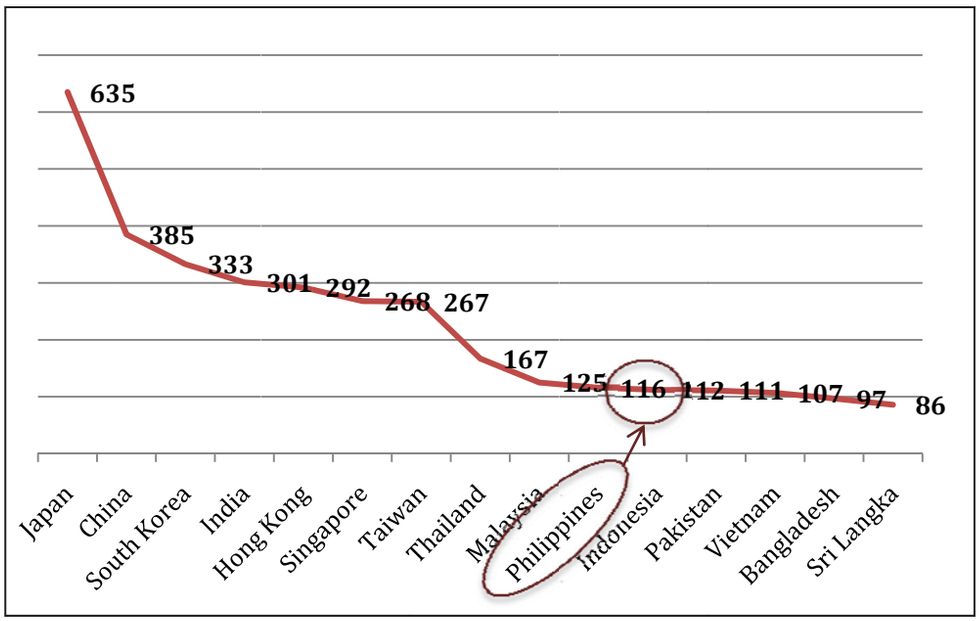
The study also provided initial data on the extent of institutional support for student organizations and community extensions, with a strong bias towards autonomous HEIs. The larger numbers of student organizations and student services present in autonomous HEIs are the evident validation in the categories of HEIs based on regulatory standards. However, with respect to the contributions of community extensions among private HEIs, the study recognizes the need to gather more data in this domain.

One disconcerting result of this research, nonetheless, is the data on research productivity among private HEIs, although the dismal performance on research productivity is not confined to private colleges and universities alone. The study raised the significant imperative for a much-needed support and financing for research among private HEIs. The lack of research productivity however, is expected in view of the lack of financial resources due to limited allocations for research and development efforts since revenue collections in private HEIs are regulated by CHED.

On enhancing research productivity. Ultimately, the academic contributions of private higher education cannot be detached from the efforts to improve and develop the research capacities of its faculty and students. How then do we open more access to funding and opportunities for research in the absence of fundamental support and subsidy for more private universities?

Perhaps, with a national coordinating agency for research and a unified agenda for research productivity in higher education for private HEIs, the goals for increasing the pursuit and publications of high-impact research outputs will be more achievable. There is also a requisite to identify research niches among private universities that may allow for access to specific grants from external sources.

Moving towards excellence. Salmi (2014) has proposed the potentials of an "excellence initiative" framework for private education where support and resources are provided for excellent programs in research or teaching.



Source: SCImago (2007)

Figure 5. Comparative H-Indices for Asian Countries from 1996 to 2012

Given the highly regulatory environment of higher education in the Philippines, the challenge is how to encourage schools to be more innovative in the face of common external standards and mechanisms for ensuring quality. First, there may be a need to re-evaluate the parameters for offering and innovating academic programs in or continued deregulation of institutions that have proven academic reputation and have consistently fulfilled regulatory standards. Second, support for faculty and professional development initiatives for private higher education should be considered as equally valuable and instrumental in achieving national development goals. Lastly, research that aims to highlight best practices and models in private higher education, which may serve as exemplars for educational reform, should be advocated.

Key Issue 2: Pursuing quality initiatives in private higher education

In this study, the discussion on quality initiatives among private HEIs had focused on both external and internal mechanisms and processes. As a marker of quality, CHED has identified Centers of Excellence (COEs) and Centers of Development (CODs) by discipline throughout the country. It is evident, however, that among HEIs, the larger proportion of COEs and CODs belongs to the private sector, suggesting a concerted effort for quality initiatives among private colleges and universities. The data also suggest that the presence of COEs and CODs seems to be concentrated in regional centers, particularly the National Capital Region (NCR).

As an internal institutional mechanism for quality, individual colleges and universities initiate and undergo accreditation. Long recognized as a fundamental quality indicator, HEIs pursue accreditation as an individual, voluntary initiative. The legal bases of accreditation which has long been established also provides for concomitant benefits and advantages for HEIs that undergo this voluntary process. Despite the benefits accrued from accreditation, to date less than a quarter (19%) of the total number of HEIs have opted to have their programs accredited by independent agencies. Such a result may be partly attributed to the cost and time that may prove onerous for many private HEIs.

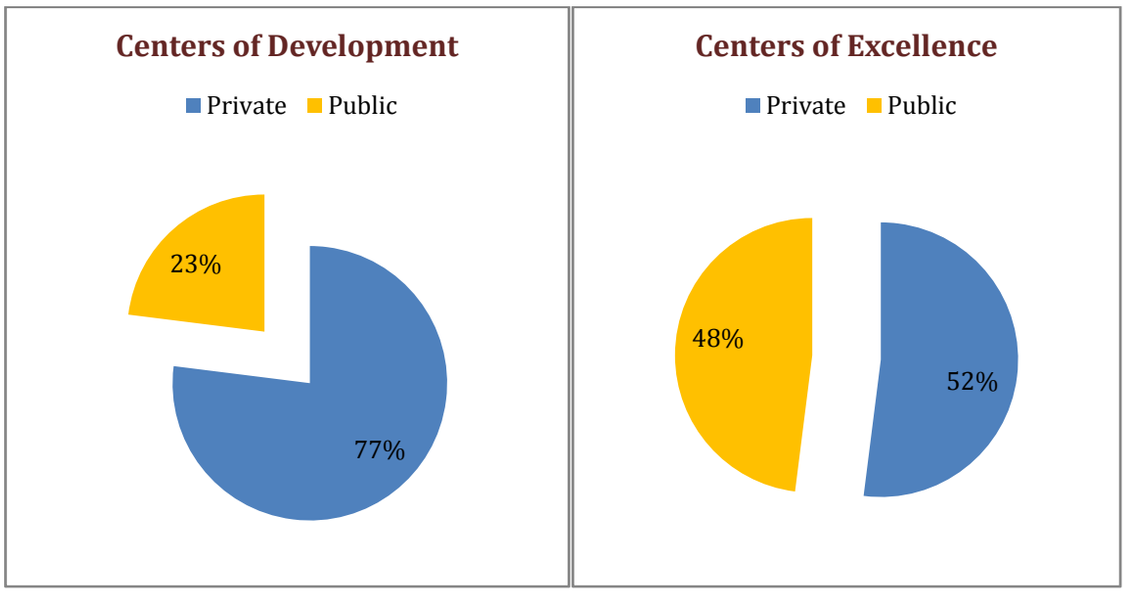


Figure 6. Ratio of COEs and CODs of Private vs. Public HEIs

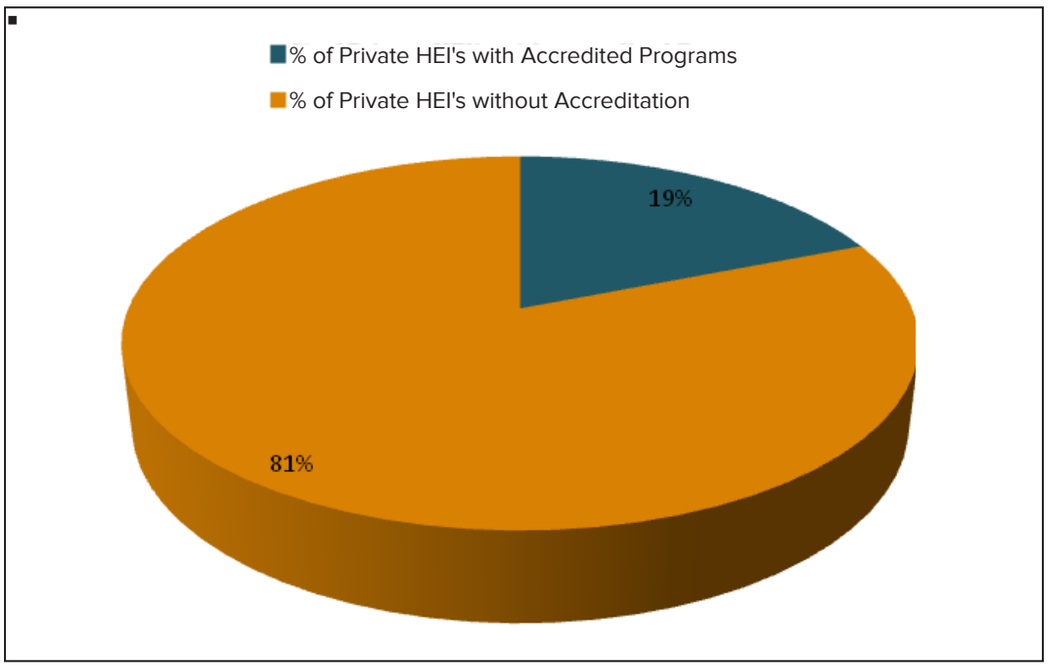


Figure 7. Ratio of Private HEIs With and Without Accredited Programs

As accrediting agencies (Philippine Accrediting Association of Schools, Colleges and Universities; Philippine Association of Colleges and Universities Commission on Accreditation; Accrediting Agency of Chartered Colleges and Universities in the Philippines) for private HEIs remain independent and operate separately, the study also recommends harmonization of accreditation processes, practices, and standards among these accrediting agencies. Similarly, access to information on accredited programs and standards should be provided for research and information.

Akin to the predominance of COEs and CODs, most private HEIs with accredited programs are also found in major regional centers particularly in the NCR. The concentration of accredited programs in major cities or municipalities inadvertently reflects the lack of access to quality academic programs in far-flung areas or regions that have limited educational institutions. In this regard, a majority of students may be enrolled in programs that do not actually meet standards of quality.

In recent years, a few private HEIs have opted for international accreditation standards of quality. Although few and far in between, internationally accredited programs may be a trend in the future as competition from the impending ASEAN integration becomes imminent.

The study further quantified quality initiatives in terms of learning and achievement outcomes evident in the performance of private HEIs in professional licensure examinations and postgraduate standardized examinations (i.e., National Medical Admission Test (NMAT), Law School Qualifying Test (LSQT)). The data indicate an overall decline in board test-takers for both private and public college graduates over the years. However, there are no conclusive trends in the performance of private collegiate graduates on performance indicators for postgraduate performance measuring readiness for medicine and law studies (i.e., NMAT, LSQT). Similarly, better scores are garnered by graduates from private HEIs in regional capitals, a result that may be considered consistent with the predominance of accredited programs and autonomous institutions in these same regional centers.

Table 2: Comparison of the Total Number Passers in Philippine Licensure Examinations Between Public and Private HEIs (2009-2012)

Professional Area	National	Public	Private
Nurse	200,204	19,994	180,201
Teacher	141,667	71,997	69,670
Criminologist	29,800	5,057	24,743
Civil Engineer	13,086	5,675	7,411
Midwife	12,324	3,618	8,706
Marine Deck Officer	12,991	2,174	10,817
Mechanical Engineer	10,135	5,216	4,919
Architect	6,727	2,024	4,907
Marine Engineer	4,917	1,865	4,862
Pharmacist	3,155	514	4,403
Social Worker	2,684	1,155	2,000
Chemist	1,065	1,426	1,258
Librarian	2,013	440	625
Nutritionist-Dietician	842	1,093	920
Veterinarian	666	649	193
Agricultural Engineer	480	676	152
Chemical Engineer	307	238	428
Forestry	551	426	54
Fisheries Technologist	493	283	24
Interior Design	210	135	416
Guidance Counselor	122	183	310
Aeronautical Engineer	105	54	156
Sanitary Engineer	170	61	139
Mechanical Plant Engineer	129	96	26
Naval Architect	118	-	105
Optometrist	28	4	166
Mining Engineer		85	44
Metallurgical Engineer		117	1
Ocular Pharmacologist		-	28

Note: Data included first-time takers only. Repeaters were excluded from the analysis. Several professions were excluded in the analysis because complete data for their licensure examinations within the prescribed period were not completely retrieved

On upgrading academic quality through voluntary accreditation. Given the voluntary nature of accreditation, the small proportion of HEIs that opt for accreditation as an internal quality initiative is indeed unsettling. The challenge remains as to how private HEIs may be encouraged to work towards academic quality. Perhaps, subsidies for accreditation may be considered as a viable option where funding from external or government sources may be made available.

Improving access to quality academic programs outside regional centers. The evident dominance of student achievement outcomes by private HEIs graduates and recognized academic programs of private HEIs in regional centers needs to be addressed as well. A moratorium on the establishment of new programs and/or new public and private HEIs has to be advocated. Otherwise, more stringent mechanisms for ensuring compliance to delivering reputable academic programs may need to be implemented for most unaccredited and new institutions.

Challenges of ASEAN integration. The initiative towards improving the quality and academic standards of private HEIs is an urgent matter that needs to be addressed in the next 5 to 10 years. Directing policy and providing support to private HEIs in improving its teaching faculty, research capacities, and community outreach will prove beneficial to the achievement of national social and economic development goals in the long run. With the impending ASEAN integration, and with more graduates from private HEIs, governmental and potential industry support for private HEIs is much-needed.

Key Issue 3: The Economic Contribution of Private Higher Education

The third phase of the study discusses the theoretical underpinnings which are mainly based on economic growth.

Operational Framework

In capturing the correlation of economic growth, private higher education and other variables, the study bases its model on the Cobb-Douglas production function. The production function shows the relationship between output, economic growth as used in this study, and factors or inputs used to obtain the output.

Based on the production function structure below:

$$Q = AL^{\alpha}K^{\beta}$$

where Q is the real output per capita, L is a multiplicative labor composite of real health expenditure per capita (H) and human capital proxied by real private education expenditure (PrE) per capita, and K is a multiplicative capital composite of real gross domestic capital formation per capita (CF) and either of the following: real import per capita (Im) or real export per capita (Ex) or total trade per capita (Tr = Im + Ex).

The basic model form adopted in the study is:

$$Y = AK^{\alpha}L^{1-\alpha}\,Y = AK^{\alpha}H^{1-\alpha}$$

which in linear form becomes:

$$\ln(Q) = \ln(A) + \alpha_1 \ln(H) + \alpha_2 \ln(\Pr E) + \delta CF + \beta_1 \ln(\mathrm{Im}) + \beta_2 \ln(Ex) + \beta_3 \ln(Tr)$$

From this basic model form, three models will be evaluated empirically via ordinary least squares (OLS):

$$\ln(Q) = \ln(A) + \alpha_1 \ln(H) + \alpha_2 \ln(\Pr E) + \delta CF + \beta_1 \ln(\mathrm{Im}) + \varepsilon_1$$
$$\ln(Q) = \ln(A) + \alpha_1 \ln(H) + \alpha_2 \ln(\Pr E) + \delta CF + \beta_2 \ln(Ex) + \varepsilon_2$$
$$\ln(Q) = \ln(A) + \alpha_1 \ln(H) + \alpha_2 \ln(\Pr E) + \delta CF + \beta_3 \ln(Tr) + \varepsilon_3$$

Methodology

Data. To arrive at the model specified above, the study utilized annual observations of various real per capita variables from 1981 to 2009. Majority of the data were acquired from the *Philippine Statistical Yearbook*, of various years, prepared by the National Statistical Coordination Board, while some were acquired from the World Development Indicators (WDI) prepared by the World Bank.

Estimation Process. The production function was estimated using the Ordinary Least Squares (OLS) regression, a method of estimating the unknown parameters in a linear regression model. It was used accordingly in this study since the production function is in its linear form and OLS is deemed to be a very powerful estimation technique as it minimizes the residual sum of squares. Moreover, it provides unique estimates for a given sample—residuals that are equal in magnitude are given equal weight—and it requires various assumptions to be derived (Gujarati, 2003).

Though OLS is a very powerful estimation technique, models may suffer from autocorrelation. Autocorrelation is the correlation of a time series with its own past and future values. It can also be referred to as serial correlation. In order to check if the model suffers from autocorrelation, a battery of serial correlation tests would have to implemented which include Durbin-Watson Test and Lagrange Multiplier Test. Appropriately to treat the problem of autocorrelation, Cochrane-Orcutt (CO) procedure and Prais-Winsten GLS procedure would have to be utilized (Gujarati, 2003).

Using the production function, the dependent variable is the real gross domestic product per capita while the independent variables include private education expenditure per capita, health education per capita, gross domestic capital formation per capita, and total trade per capita. Based on the model specification, all of the variables that were used were macroeconomic variables from the years 1981 to 2009.

Summary

A country's economic growth is driven by several factors and one of them is human capital. This study focused on the contribution of private higher education to economic growth. Higher education in general provides an opportunity for the population to be ready for the labor market, equipped with certain skills and training. In the Philippines, the number of private higher education institutions is greater than that of the public higher education institutions. Although this study did not focus on the performance of the private versus that of the public HEIs, it zeroed in on the contribution of private higher education through the variable private higher education spending. Using annual data from 1981 to 2009 from various sources, the results showed that private higher education has a positive effect on economic growth.

Private higher education spending together with other variables such as gross domestic fixed capital, health expenditure, and trade were used to represent the factors that affect economic growth. Based on the results, all variables presented a positive relationship with real gross domestic product. Spending on private higher education yielded the highest effect on real gross domestic product compared with the other variables. This highlights the contribution of private higher education to economic growth. Although the other variables, such as fixed capital, health expenditure, and trade, are important contributors to economic growth, private higher education expenditure has a more direct effect. The results of this study are consistent with those of the other studies surveyed in the literature.

Positive externalities created by private higher education. Investments in private higher education yield more positive externalities in terms of the quality of graduates that it produces. The substantially large number of private institutions and their enrolment have made this possible. Over the years, the private institutions have proven that they have comparative advantage in producing graduates in professional courses such as business, engineering, medical and allied sciences, among others. Given this, the first recommendation is to encourage more private and public partnership programs geared towards improving the condition of higher education in the country. This partnership program should involve channeling more funds towards the development of the professional programs through the Center of Excellence and Center of Development program of the Commission on Higher Education. This will encourage private higher education institutions to improve their degree programs to qualify for the aforementioned programs.

Another way of investing in the private higher education institutions is by funding research centers and business incubators to help faculty members and students gain more experience and knowledge. There are only a few universities that have high research productivity; thus, there is a need to improve the culture of research through funding.

Research centers in higher education institutions provide an opportunity for the

faculty members and students to be updated with the latest ideas and techniques.

Scholarships for private higher education. Since private higher education is more costly than public education, more scholarships should be given to students going to the private sector. The scholarships given by the Department of Science and Technology are limited and not enough to meet the costs if the student chooses to go to a private university. This should be supplemented by financial support coming from the private higher education institution. These scholarships though should be prioritized towards courses that create higher social benefits such as engineering, medical science, and teacher education.

Private higher education for nation-building and greater regional cooperation. This study highlighted the important contribution of private higher education institutions in economic growth. Without the initiative and innovativeness of the private sector, improvements in welfare and standard of living will not take place. In most cases, the private sector takes the lead in fostering new ideas carried out as an improvement in the curriculum or in the way of teaching and doing research. This kind of behavior should be encouraged and rewarded in order achieve greater efficiency.

The private sector has also taken the lead in creating more awareness in the importance of regional integration. After the ASEAN Economic Cooperation in 2015, most private higher education institutions have adopted a new academic calendar that is more in-sync with that of other universities in the region. This will allow the smooth exchange of students and faculty across countries in the region as well as help increase the capacity for innovation. The private sector is also taking steps in improving its curriculum, making it more relevant to the changing times and demand in the labor market. This task will be easier if all sectors in the economy, especially the government, will work hand-in-hand for the improvement of the state of higher education in the Philippines. The role of the Commission on Higher Education is very crucial in terms of formulating and implementing the minimum requirements for strict compliance among higher education institutions.

Conclusion

Some urgent and pressing concerns for discussion and action have surfaced from this study on private higher education. Inadvertently, it may have raised more questions whose answers are yet to be found. But given the role and contributions of the private sector in higher education brought forth in this study, it is certain that investments in private education will redound to the achievement of national development goals. The prevalence of a positive policy environment that is sensitive to the unique nature of private higher education is also crucial at this point in time. In the end, collective action and a sustainable national agenda towards improving and supporting private higher education will be instrumental in developing the future workforce and attaining national progress.

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Vision 2020 and Beyond: Road Map for the Philippine Printing Industry

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The global printing industry is rapidly changing due to advances in technology and shifts in geo-political realities. Digital technology, for example, has opened up opportunities for some players, but has taken its toll on companies that failed to upgrade their operations. The liberalization of trade of goods and services, on the other hand, has allowed some companies to get the cheapest sources of inputs (e.g., paper and labor) beyond domestic borders, thus bringing down their production costs. But this has also threatened local commercial printers whose clients could now import books and other printed materials more cheaply from foreign suppliers, and whose skilled personnel (e.g., machine operators, graphic designers) have found better-paying jobs in printing companies in more advanced economies.

For the Philippine printing industry, these developments are part of the many factors they have to face to keep their businesses profitable. Understanding these socio-cultural, technological, economic, and politico-legal developments is important if they are to remain viable in a constantly changing business environment.

Recognizing this need, the Philippine Center for Print Excellence Foundation (PCPEF) worked with the DLSU-CBRD to formulate a road map for the Philippine printing industry. DLSU-CBRD and PCPEF conducted a series of roundtable discussions in Manila and consultation sessions in Baguio, Cebu, and Davao, during which industry players gave their comments on the papers written by the DLSU-CBRD team and provided inputs on what directions the industry should take. On August 1, 2014, DLSU-CBRD

The **Center for Business Research and Development (CBRD)** is the research and advocacy arm of the Ramon V. del Rosario College of Business (RVRCOB) of De La Salle University (DLSU). As a signatory of the UN-backed Principles of Responsible Management Education (PRME), the RVRCOB has committed to promote the PRME principles. These principles encourage the RVRCOB faculty and researchers, among others, to "engage in conceptual and empirical research that advances their understanding about the role, dynamics, and impact of corporations in the creation of sustainable social, environmental and economic value," and to "facilitate and support dialogue and debate" among different stakeholders "on critical issues related to global social responsibility and sustainability."

Keeping in mind the DLSU's mission of "a leading learner-centered and research University bridging faith and scholarship, attuned to a sustainable Earth, and in the service of Church and society, especially the poor and marginalized," the CBRD provides support to research programs and activities that address the following themes: responsible management education, multi-stream management approaches, humanistic management, ethical business practices, sustainable business practices, corporate social responsibility, corporate governance, social marketing, SME development, family business management, and social entrepreneurship.

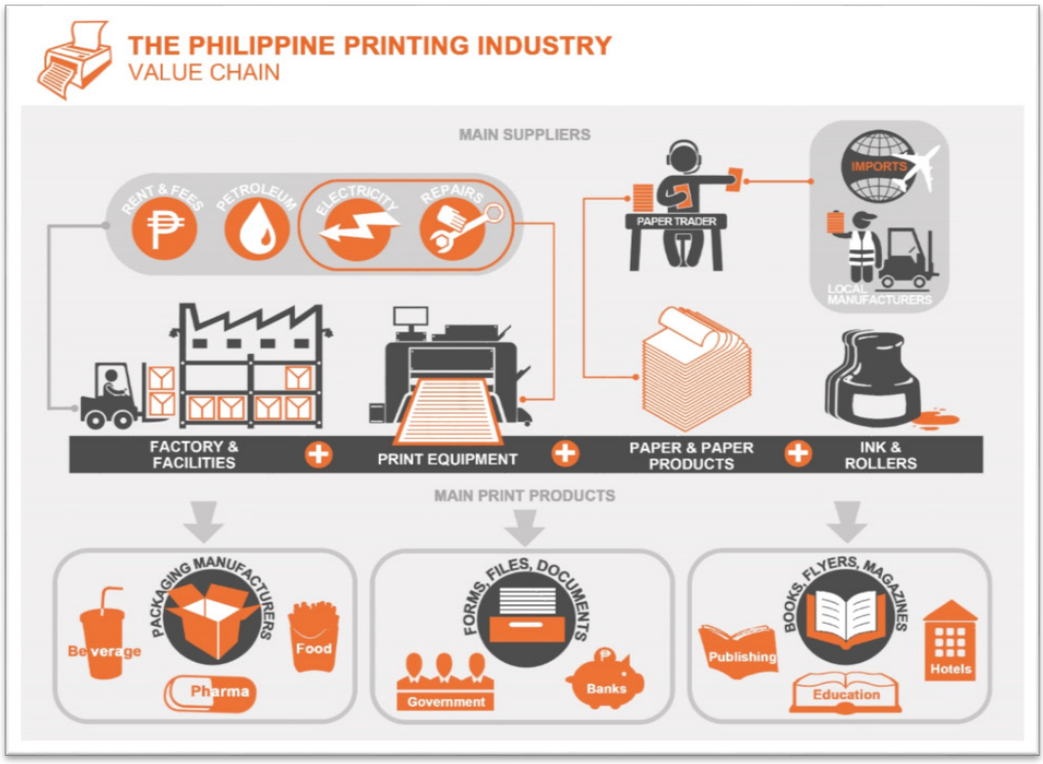
and PCPEF hosted a public presentation which was attended by the leaders of the major industry associations and representatives of allied industries, key government agencies (e.g., Department of Trade and Industry, Technical Education and Skills Development Authority), and academia.

The Road Map

This road map is based on the insights and inputs generated from the five research papers that the DLSU-CBRD team wrote: (a) The printing industry in the Philippines: A general landscape: (b) Innovation imperative: Upgrading for competitiveness or survival? (c) Technological trends: Death or rebirth of the Philippine printing industry? (d) ASEAN integration: Prospects and challenges of the Philippine printing industry in an open market, and (e) PCPEF Printing Institute: Addressing the talent bottleneck in the local printing industry.

Specifically, the road map provides a general picture of the state of the Philippine printing industry; determines the opportunities and threats faced by the industry; identifies the prospects and challenges that the industry faces in the light of ASEAN integration; and proposes strategies to enhance the industry's global competitiveness. It is primarily intended for the leaders of the printing industry who are expected to initiate the changes needed to boost the industry. It can also serve as a guide for businesses belonging to allied industries (e.g., publishing, packaging, manufacturing of paper, ink and rollers, etc.) whose success is linked to the success of the printing industry (see Figure 1). Finally, it seeks to aid local and national government in the creation of a policy and regulatory environment that is conducive to the continued growth of an industry that is critical to the Philippine economy.

Figure 1. Value chain of the Philippine printing industry



Source: Habaradas & Umali (2014)

Industry Characteristics

The printing industry in the Philippines today is characterized as follows: (a) it is growing both at the national and regional levels; (b) its bigger players earn more profit relative to the smaller players; (c) it relies heavily on imported inputs; (d) it has a noted overall increase in investments in printing equipment and other machinery; (e) it has an observable increase in the adoption of digital printing, although offset printing remains a dominant technology; (f) it has produced new business models due to technology; (g) its growth is hampered by the lack of skilled personnel; (h) it is a laggard in the global and regional trade of print-related products, partly due to the absence of agreed upon technical and safety standards; and (i) it has weak linkages with universities and research and development institutes (RDIs). Apart from the aforementioned, family business succession in the industry is a growing, but largely unarticulated, concern. There is also rivalry among existing national industry associations. Among its players, there is a perceived lack of support from the government for the industry.

To address the industry's challenges and concerns, the road map discusses in detail what the key stakeholders have articulated during the roundtable discussions and consultation sessions.

Vision

"A dynamic and innovative printing industry that contributes to national development by nurturing Filipino talent and utilizing their skills in producing high-quality products and services for both the local and global markets"

Goals and targets

The goals of this road map are to: (a) enhance supply capability; (b) increase demand for print products and services; (c) encourage collaboration among the players of the printing industry and its allied industries; and (d) provide a conducive business environment.

Enhancing supply capability. To enhance the capability of firms to produce quality print products and services, the project team found it essential to address issues concerning the cost and availability of key inputs (i.e., raw materials, equipment, and skilled personnel) and the efficiency of production processes. Among the specific indicators for gauging the industry's progress relative to this goal are:

- establishment of technical standards required to assess the quality of printing services from pre-press to post-press operations;
- growth in the acquisition of brand new equipment rather than of reconditioned machines;
- adequacy in the supply of print operators and press mechanics (e.g., increase in the number of graduates of printing schools);
- adequate supply of layout and graphic artists (e.g., increase in the number of graduates of graphic arts/design schools); and
- establishment of additional printing schools and graphic design schools that address industry needs.

Increasing demand for print products and services in local and foreign markets. It seems like a consensus among industry leaders that printing companies must not only seek to defend their local markets from foreign players but must also expand their horizons to include foreign markets. Among the specific indicators for gauging the industry's progress with regard to this goal are:

- sustained domestic growth of the printing industry (e.g., 8% to 10% average annual growth until 2020, slightly exceeding the projected growth in gross domestic product (GDP) over the same period);
- sustained and rapid growth of Philippine exports of printed matter over the next five to ten years (e.g., 8% to 10% average annual growth until 2020; or more rapid export growth over import growth over the same period); and
- successful entry into new/untapped international markets.

Encouraging collaboration among the players of the printing industry and its allied industries. Based on the experience of other countries with vibrant printing industries, the collaboration of industry players among themselves and with members of allied industries has contributed to their collective growth. This also gives them a stronger voice when seeking support from government and/or international funding agencies. Among the specific indicators for gauging the industry's progress relative to this goal are:

- establishment of a comprehensive database of industry players and their products/services;
- periodic sharing of key information (e.g., audited financial reports) that enables the industry to track its progress in various areas;
- joint activities (e.g., industry fairs) by the major industry associations (e.g. PCPEF, Filipino Chinese Printing Association (FCPA), Printing Industries Association of the Philippines (PIAP), Philippine Printing Technical Foundation, Inc. (PPTF); and
- stronger and more active regional associations (e.g., Cebu Organization of Printing Industries, Inc. (COPI) and Printing Industry Association of Davao, Inc. (PIADI)).

Providing a conducive business environment. This goal is principally addressed to government which must shift its paradigm from performing a mere regulatory role to also fulfilling an enabling role for businesses. Among the specific indicators for gauging the industry's progress in this regard are:

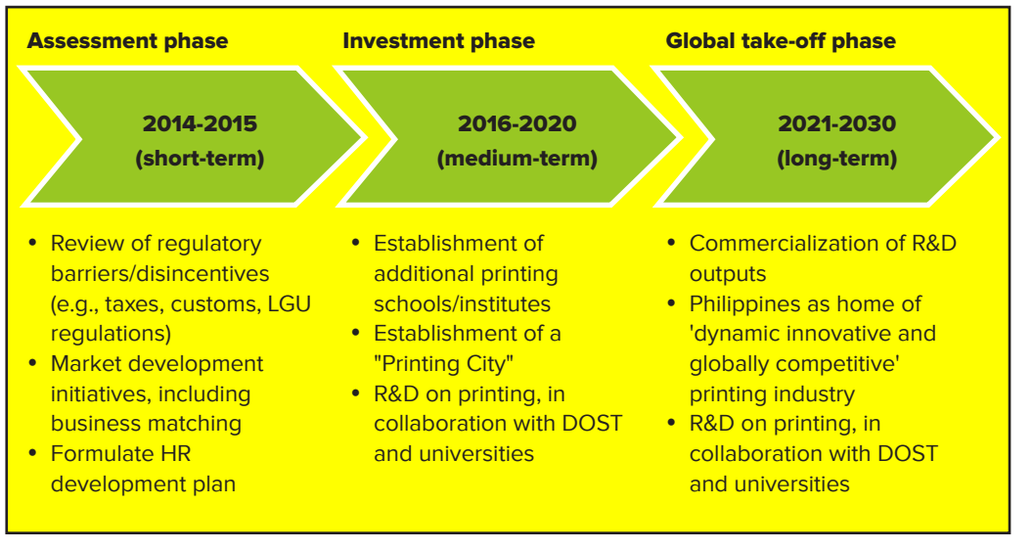
- removal of restrictive regulations that increase the cost of doing business in the country; and
- creation of a "Printing City," within which industry players can enjoy various incentives (e.g., tax breaks, subsidized power rates, access to research and development (R&D) services, etc.).

Strategies and timelines

The abovementioned goals can be achieved by adopting appropriate strategies that must be implemented in several phases, in order to have noticeable gains over time.

Assessment phase (2014-2015). The short-term strategies will focus on three major areas: (1) regulatory reform; (2) aggressive market development, including a systematic business matching campaign; and (3) formulation of a coherent human resource development plan.

Figure 2. Major phases of the road map



Among the regulatory reforms that the industry must lobby for are the following: (a) removal of restrictive Bureau of Internal Revenue (BIR) measures; (b) rationalization of the Philippine tax structure to match those of other ASEAN economies; (c) a review of the effect of the value-added tax (VAT) on increasing cost of printing and publishing vis-a-vis the tax-free importation of books; (d) provision of incentives for purchase of capital equipment; (e) removal of Custom's requirement for 'double inspection'; and (f) reconsideration of LGU-specific regulations (e.g., truck ban in Manila, machinery tax, etc.)

Aggressive market development efforts can be achieved by: (a) stimulating demand for print products and services by strengthening the manufacturing sector; (b) generating a list of local companies that import print products but which can be adequately served by local printers; (c) encouraging trade missions to refer local printers to potential suppliers and customers in their assigned countries; (d) conducting regular business matching activities organized by the Department of Trade and Industry (DTI) or industry associations; and (e) enhancing marketing and branding skills of industry players.

Industry leaders must also initiate the formulation of a clear and coherent human resource (HR) vision and plan for the industry. This vision and plan "should include industry-defined jobs, occupational grades, career paths, and if possible salary brackets." This can serve as reference point for future HR decisions of individual firms and for the industry. Occupational grades and levels should also have defined requisite knowledge, attitudes, skills and experience (i.e., job requirements) that will facilitate recruitment, training and promotion. The creation of an industry training plan "that incorporates the industry's agreed training environment and scenarios required to best suit the industry's needs" is also recommended.

Investment phase (2016-2020). The medium-term strategies must include the following: (1) establishment of additional printing schools/institutes; (2) establishment of a "Printing City"; and (3) R&D on printing, in collaboration with the Department of Science and Technology (DOST) and universities.

The formulation of the industry training plan in the first phase must clarify the role of training institutions, industry associations, and companies in talent development. This should set the stage for the establishment of more formal programs for training technical and managerial talent, preferably in partnership with existing educational institutions (e.g., Technological University of the Philippines (TUP), College of Saint Benilde (CSB), DLSU). In addition, formal programs must be supplemented by internships in printing companies to facilitate future employment. There is, likewise, a need to emphasize succession planning in formal curricula.

Many industry players are also keen on the creation of a "Printing City," which will bring printers and companies from allied industries in a cluster or a special zone. Within this zone, industry players will enjoy various incentives (e.g., lower corporate tax, subsidized power rates, tax incentives for importation of inputs, and access to R&D services).

To ensure the long-term competitiveness of the industry, it must promote R&D on printing-related matters (e.g., new materials for paper, ink, packaging materials, etc.). Worth emulating is the experience of Thailand which offers advanced degrees on pulp and paper technology, printing technology, and imaging technology in Chulalongkorn University.

Global take-off phase (2021-2030). In the global take-off phase, the country must already begin commercializing some of the R&D outputs that resulted from R&D efforts in the previous phase. At this point, the Philippines must already have a "dynamic, innovative and globally competitive printing industry."

The Policy Recommendations for the Expansion of the Securitization Market in the ASEAN+3 Countries

This project was commissioned by the Association of Southeast Asian Nations (ASEAN) Secretariat under the ASEAN+3 Research Group. The Angelo King Institute for Economic and Business Studies (AKIEBS) worked with the Japan Research Institute (JRI) to study the securitization markets of the ASEAN+3 member countries. The project began on August 2013 and ended on May 2014.

The members of the AKIEBS team included Dr. Tereso S. Tullao, Jr., Full Professor of Economics and Director of AKIEBS, as research associate; Dr. Lawrence B. Dacuycuy, Full Professor of Economics and Dean of the School of Economics, as research associate; Mr. Marvin Raymond F. Castell, M.S., Assistant Professor of Economics and Vice Dean of the School of Economics, as project coordinator and research associate; Mr. Angelo B. Taningco, M.S., Assistant Professor of the School of Economics, as research associate; Mr. Christopher James R. Cabuay, M.S., Assistant Professorial Lecturer of the School of Economics, as research assistant; and Mr. Santiago F. Dumlao, Jr., MBA, LLB, Secretary-General of the Association of Credit Rating Agencies in Asia (ACRAA) and Director of the Philippine Rating Services Corporation (PhilRatings), as project consultant.

Project Rationale

Securitization is a process of pooling certain types of assets and transforming them into interest-bearing securities. It is used for raising new funding sources by transferring assets off balance sheets or by borrowing against these assets.

The process of securitization first entails the pooling together of a company's [the originator's] assets (e.g., loans, receivables, leases, cash flows in general) and mortgages. Depending on the abilities of the originator, it may choose to repackage the asset pool into securities itself: divide it into tranches, setting variable interest rates and maturities. Alternatively, the originator may sell the original asset pool to an intermediary, a special purpose vehicle (SPV). The SPV is a legal entity established by a national government specifically to select and purchase these assets from these originators. It should be bankruptcy-remote and financially-shielded from the bankruptcy of the originator. The role of the SPV in the context of securitization is usually to promote the process of securitization, and enhance the liquidity of the financial sector. The SPV may also be responsible for the repackaging of assets pool as notes or bonds.

At this point, because the original assets pool has been transformed into securities, there is a need to have credit rating agencies (CRAs) to assess their quality. Lastly, these securities may now be sold to investors with appetite for risks associated with these securities.

Securitization is a lower-cost financing-scheme that helps improve liquidity and asset-liability management, and creates investment opportunities. To countries, it helps deepen and broaden financial markets in the region, specifically by converting illiquid and poorer credit-quality assets into assets that have better liquidity and credit-quality. Furthermore, it serves as an alternative to bank financing which is not widely-accessible to small and medium-sized enterprises.

On the part of the originators, for example banks (wherein liquidity is of utmost significance), a very important benefit is the diversification of funding. Not only would securitizing assets and selling them give the originator more liquidity, but the sheer size of the pool of assets provides the originator access to credit markets and financing as it detaches the issues of the originator's credit quality. Because the originator sells its pool of assets (which is usually comprised of illiquid assets, e.g., non-performing loans), securitization reduces the legal obligations of the originator as it transfers some of the risks associated with credit, liquidity, interest, prepayment, systemic, and possibly default of borrowers/mortgagors, to investors. Securitization improves a firm's return on capital as it is a form of revenue generation and requires less capital to support than on-balance sheet funding.

On the part of the investors, securitized assets, being bankruptcy-remote secured lending with credit enhancement or government guarantees, improve their credit quality as CRAs give securities high ratings. This allows investors to meet prudential and regulatory standards on investment-grade debt. Securitized products come with different tenors and coupon rates. This provides additional product diversity (portfolio diversification) as it is an additional menu item for investors with varying risk appetites. Because investors can use securities to diversify their portfolios, they are able to maximize their returns on interest spreads as compared to corporate or sovereign debt, thereby creating more attractive yields.

However, the securitization market in the ASEAN+3 region is not yet that developed as compared with that of the U.S. and some countries in the European Union. Securitization entails some costs to financial markets and the real economy if structures and practices create wrong incentives and inadequate risk management practices. Securitization has been pursued seriously only after the 1997-98 Asian financial crisis when countries in the region enacted laws to promote it. However, the 2007-2008 global economic and financial turmoil highlighted the risks of securitized products such as mortgage-backed securities and collateralized debt obligations. Despite this, developing the market has remained an essential objective for policymakers.

This study provided a comprehensive evaluation of the securitization market in the ASEAN+3 member countries: profiling the industry; identifying stakeholders; evaluating the various securitized finance products; looking at and assessing legal and regulatory measures; and determining the challenges that hinder the development of the market. It also developed policy recommendations in terms of legal and regulatory frameworks and accounting standards that should help policymakers in the region to formulate more appropriate policy and regulatory measures.

Since the project is in partnership with the JRI, the Philippine team focused on the ASEAN-4 countries: Philippines, Thailand, Malaysia and Indonesia. These are the developing countries in the region that have securitization markets with varying degrees and levels of development.

Project Outputs

The project produced four papers. Paper 1 entitled *An Industry Analysis of the Securitization Market in the ASEAN-4 Countries*, was written by Mr. Castell. Paper 2 entitled *A Survey of Securitization Products*

in ASEAN-4 was written by Mr. Taningco. Paper 3 entitled *An Evaluation of the Legal and Regulatory Environment of Securitization Market in the ASEAN-4* was written by Atty. Dumlao and Dr. Dacuycuy. Paper 4 entitled *Policy Recommendations for the Expansion of the Securitization Market in the ASEAN+3 Countries: An Integrative Report*, written by Dr. Tullao and Mr. Cabuay, served as the integrative report of the first 3 papers, and presented the policies for the development of the securitization market.

Key Findings

East Asian securitization started later than that of the U.S. historically. The securitization market expanded for several economies as they were encouraged to adopt securitization after the Asian financial crisis in 1997. In particular, after 2000, the securitization of housing loans became very popular in Hong Kong, Japan, Korea and Malaysia, while Singapore experienced the same for commercial property. East Asian markets have not been severely impaired by the 2008 crisis. As of 2013, the outstanding size of the asset securitization market in the ASEAN+3 pales in comparison to those of Japan, Korea, Australia, the United Kingdom, and the U.S. The ASEAN-4 outstanding size amounted to USD6.301 billion of which Malaysia has the largest share with USD4.102 billion, followed by the Philippines with USD1.348 billion, Thailand with USD636 million, and Indonesia with USD216 million. As of the third quarter of 2013, the U.S. had about USD9.743 trillion, UK had USD582 billion, Japan had about USD176 billion, and Korea had about USD132 billion.

Furthermore, it may be inferred that securitized-product offerings in the ASEAN-4 have remained limited. Mortgage-backed securities (MBS) are the primary offering in the ASEAN-4 as it is offered by all four countries. However, asset-backed securities (ABS) such as auto loan receivables, credit card receivable, sales receivables, leases, are only offered by Malaysia and Thaliand. Only Malaysia and Indonesia offer real estate investment trusts (REITs). Only Malaysia offers collateralized debt obligations (CDOs). And only the Philippines offers securitized infrastructure projects. The offerings of Japan and Korea, for example, include all offerings of the ASEAN-4, plus non-performing loans (NPLs). Out of the four, Malaysia appears to have the most diverse offerings of securitized products, and this shows in the outstanding size of its asset securitization market.

Indonesia has the smallest securitization market among the ASEAN-4 with only USD216 million in terms of outstanding size, offering only MBS and REITs. The size of the market in Indonesia amounts to a total of IDR3.6trillion worth of Residential MBS (RMBS) issuances for the period 2009-2013. The market is primarily regulated by the Capital Market and Financial Institution Supervisory Agency, locally known as *Badan Pengawas Pasar Modal* (Bapepam), under the Ministry of Finance.

Malaysia has the strongest securitization market among the ASEAN-4 with USD4.102 billion by end-2013 and offers the widest range of securitized products: MBSs, ABSs, CDOs, and REITs. The national government established the mortgage-financing body, National Mortgage Corporation or Cagamas Berhad (Cagamas) in 1986, which functions as an SPV for the mortgage market. Cagamas has been the largest issuer of RMBS and Islamic RMBS. From MYR1.6 billion in 2004, despite a peak of MYR5.4 billion in 2007, RMBS amounted to MYR3.2 billion in 2013. Islamic RMBS started with MYR2.1 billion in 2005, peaked in 2007, and amounted to MYR2.9 billion come end-2013.

The Philippine securitization market mainly issues MBSs and some other securitized products. The market was kick-started by a multiple-tranche asset-backed note amounting close to USD2 billion in 2002, originating from the MRT III Funding Corporation, securitizing future dividends from the Metro Rail Transit Corporation (MRTC) arising from equity rental payments from the Philippine government's Department of Transportation and Communications to MRTC to facilitate the first phase of the construction of the Light Rail Transit System in Metro Manila.

The Philippines has about USD1.348 billion in terms of outstanding size of the Asset Securitization Market. The primary regulators of the securitization market are the *Bangko Sentral ng Pilipinas* (BSP) and the Securities and Exchange Commission (SEC), as well as the Department of Finance (DOF) and the Bureau of Treasury (BOT).

Thailand has a relatively diverse securitization market, offering ABSs and MBSs, and an outstanding size of USD636 million of the asset securitization market as of end-2013. REITs, however, have not yet taken off. The Securities and Exchange Commission (SEC) is the regulatory agency which can identify and qualify the originator and the SPV.

Challenges for the Securitization Market

Despite the benefits securitization can bring to investors, financial institutions and other originators, there is little interest in this financial instrument in the region. Although, securitization can be an inexpensive alternative in expanding liquidity, it remains unattractive to key players in the market. This lethargic development can be attributed to the demand factors as well as supply factors.

On the demand side, investors, in general, have low appetite for the inclusion of ABSs and MBSs in their financial portfolios due to the perceived riskiness of this alternative financial instrument. These risks can be categorized into two types. The first type of risk concerns the uncertainties associated with securitization that led to the subprime crisis that hit the U.S. in 2007-2008. It is often argued that if developed countries with more mature financial markets and well established regulatory bodies were unable to withstand the risks associated with securitized assets, what are the assurances that underdeveloped financial markets and weak regulatory framework in the region can respond to these risks? The second type of risks pertains to the attributes and processes involved in this new financial instrument. Part of these processes is the way the asset is structured, and how it is marketed to the investors. Since securitization involves the pooling of various assets with different levels of risks, valuing the risks of mixed assets in a new derivative asset may be problematic, if not incomprehensible to potential investors. It may very well be that these perceived risks emanate from the lack of knowledge or limited information on the part of investors on how securitization works. In addition to these risks, the costs involved in the creation of this type of asset can also deter demand. Given that bank credit is more accessible and easier to secure, securitizing asset becomes an expensive alternative form of financing. Likewise, competing sources of funds from the equities and bond markets are easier to secure compared to ABS or MBS.

On the supply side, there is a lack of interest on the part of originators, mostly banks and other financial institutions, to securitize their low quality credit assets to increase their liquidity. This lack of enthusiasm comes primarily from the cost of creating this financial instrument. A major component of costs consists of time-consuming procedures and submission of numerous regulatory and accounting requirements in creating an asset. Since the asset is a pool of various assets with differing risks, the credit ratings can be complicated and the requirements cumbersome to conform with regulatory and accounting standards. Another reason that contributes to the high cost of processing is the huge value and volume of pooled assets needed to reap economies of scale. Since there are very few originators, the value of the pooled assets does not warrant the prohibitive transaction cost. There is a need to break this vicious circle to lower the cost so that financial institutions may be motivated to securitize some of their receivables and low credit quality assets.

Developing the Securitization Market of the ASEAN Region

Securitization, if introduced in a transparent and orderly way, offers additional gains for Asian countries such as capital market

development as more securities are added to the market. Two areas where securitization can benefit ASEAN-4 economies are home ownership and infrastructure development.

In developing the securitization market, the study proposes the following:

1. To attract the development of securitization in the market, national supervisory authorities should review their existing laws/policies to encourage more securitization in the market.
2. To help enhance the supply of and demand for securitized products in the region, risks inherent in these structured products have to be mitigated and investors have to be given ample protection.
3. The role of regulation should focus on the securitization plan. A securitization plan or securitization project must be presented by the SPV to the regulator for approval. The securitization plan should include the whole gamut of securitization-related activities to meet the regulator's standards of investor protection and to maintain the integrity of the financial market.
4. There is a need to simplify how the securitized assets are structured to enhance transparency and promote marketability. Simplification may address the perceived risks and uncertainties of investors given the complexity and sophistication of current securitized assets.
5. To reinforce the impact of simplification, there is also a need to establish a standard framework to address the diverse nature of different loans types or terms in order to enhance the investor's appetite on securitized products.
6. The second type of risks can also be addressed with improved regulatory framework and putting in place accompanying accounting standards.
7. There is a need to rethink drastic adoption of regulatory requirements which may introduce inertia in securitization markets by reducing the amount of available capital that can be used to invest in securitized products.
8. There is a need to broaden and intensify information campaigns aimed at investors and potential issuers.
9. There is a need to organize efforts to develop statistical systems, and reporting procedures for strategically important sectors such as SMEs in order to address informational requirements intended to measure or gauge the quality of asset holdings.
10. Securitization can also play a role in the development of small and medium-sized enterprises. ASEAN-4 governments can likewise get involved in synthetic securitization structures, like mimicking the Cagamas SME model, that can mitigate the credit risks of SME loans and make its securities more attractive to investors.

The securitization of assets can contribute significantly to the development of the capital market in the ASEAN-4. There are strong theoretical and conceptual bases to promote securitization as an alternative financing vehicle in the region.

The Political Economy of the Rice Industry in Southeast Asia: A Comparative Analysis of Value Chain in Ensuring Rice Sufficiency in Six Countries

Benedict A. Exconde*

The **Yuchengco Center** conducts innovative studies and produces excellent research outputs that highlight friendly bilateral relations between the Philippines and neighboring countries. The Center's mission is to heighten public knowledge and awareness on political, economic, and social policy concerns in the Philippines and other countries, and enhance its role as a think tank where research results are regularly transmitted to the end users for evidence-based legislation, policy formulation, and program planning. It received an award from the Japanese Government for its invaluable contribution in the promotion of mutual understanding and friendly relations between the two countries through its researches, conferences and publications.

Introduction

Rice is the most dominant and most actively traded crop in Southeast Asia. It is the major livelihood base for many of the region's population. It is also the primary agricultural export, with millions of tons being sold yearly to consumers within and outside the region.

This research, a commissioned study by the Chinese University of Hong Kong, focused on the rice value chains in six Southeast Asian countries, namely Cambodia, Indonesia, Malaysia, the Philippines, Thailand and Vietnam. It analyzed the distribution,

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processing, and marketing channels and their influence on the supply and price of rice; the relationships, organizational structures and interaction among various actors within the chain, and the similarities and differences among the aforementioned country.

The Comparative Analysis: Similarities and Differences

The similarities and differences as well as the strengths and weaknesses in the value chain among and between the six countries were identified and described with regard to dominant sectors, the relative roles, and relationships of individuals or entities within these value chains.

Intercountry Similarities

Rice trade in all of the six countries in the study is dominated by the private sector. The free market policies that are in place encourage private entrepreneurs to establish rice-oriented businesses that cater to either the domestic or the overseas market or both. However, the degree of dominance by the private sector varies in each country. While Cambodia, the Philippines and Thailand encourage these businesses to cater to both domestic and foreign consumers, Indonesia, Malaysia and Vietnam limit their participation to the local markets as the export or import functions are retained exclusively by the government.

All countries in the region have rice value chains of varying lengths and forms. The rice value chains are long, complex; involve multiple intermediaries; and cover multiple locations. Only Malaysia has a relatively short and simple rice value chain but it still involves multiple intermediaries.

These rice value chains involve multiple individuals or entities that act as intermediaries, with most of them performing multiple functions, i.e., a miller also takes on the roles of a wholesaler and a retailer, although a few of them are more specialized and very specific in terms of their function in the chain. Aside from performing multiple tasks, their operations are uncoordinated, resulting in overlapping roles and positions in the chain, and cover multiple locations.

The key advantage that all rice value chains in the region have is the close ties among the actors in the chain, specifically the intermediaries, and the localities where they operate. Intermediaries have a broad knowledge about the farming practices of, and rice varieties being grown in the community; and establish strong ties with farmers and other residents, allowing them to gain the trust of the community and conduct transactions with relative ease. They further strengthen their position and trustworthiness in the community by assisting farmers, especially those who are located in inaccessible communities or areas where government presence and rice production-, processing-, and marketing-related infrastructure are either minimal or lacking.

The complex rice value chains in all six countries have been in existence for many years. The Cambodians, Filipinos, Indonesians, Malaysians, Thais and Vietnamese accept them as a “standard practice” in rice trade. This is one reason why there is resistance to the introduction of new ways of conducting rice trading, as people are already comfortable with the long, complex, and complicated value chains that have been in place for quite a time.

In terms of food-related policies, all six countries have rice security as their top priority. Governments in the region ensure a stable supply and price of rice for their citizens, especially during lean months and times of crises. Policies that are geared toward ensuring food security, and stable supply and price of rice include export and import controls, development of new rice varieties and production and processing methods, building of rice farming-related infrastructure such as roads and warehouses, and the maintenance of strategic national rice reserves.

All six countries in the region implement liberal economic policies that enhance the participation of the private sector in rice trade. As a result, authorities limit their intervention to industry regulation and trade promotion. They

A Thai vendor weighs a bag of rice at a market in central Bangkok, Thailand.

A woman sells rice in her stall on a street in Hanoi, Vietnam.

A vendor sells rice at a public market in Jakarta, Indonesia.

Various varieties of rice are sold at a market in Sarawak, Malaysia.

also function as actors in the value chain through state-owned enterprises (SOEs) and government agencies that engage in local and foreign rice trading.

As expected, all countries in the region suffer from rice value chain- and trading-related problems such as poor infrastructure, rising prices of inputs and fuel, loan payments, high transportation costs, and payment of commissions to purchasing agents and other intermediaries. These problems lead to higher farmgate, wholesale and retail prices which affect both domestic and foreign rice consumers.

Cases of corruption, poor policing and customs control of border areas, and rice smuggling involving both government officials and private businessmen are reported throughout the region. Smuggling has become pervasive and common due to the high demand for rice in Indonesia, Malaysia and the Philippines; consumers in Thailand switching to cheaper rice because of domestic rice price increases; and great demand for cheap rice produced by Cambodia and Vietnam. Other reported illicit rice trade-related activities include government officials and employees who profited from legally obtained but overpriced or smuggled rice; private traders colluding with government officials and employees to gain preferential access to state subsidies and key business contracts; and hoarding of paddy and milled rice stocks to artificially create shortages and increase prices.

A rice seller prepares rice for sale in Phnom Penh, Cambodia

Commercial milled rice varieties are sold at a market in the Philippines.

Intercountry Differences

Private sector actors in the rice value chains differ in terms of business capitalization and financial resources. Most of the intermediaries, especially those operating within the immediate farming community, are small- to medium-scale entrepreneurs with limited business capital and reach. Large-scale intermediaries such as millers and traders conduct operations in multiple locations and perform numerous functions within the chain because they possess vast financial resources, and, in most cases, wide government connections.

While governments in the region have food security as their priority, their focal areas vary. The rice-importing countries of Indonesia, Malaysia and the Philippines focus their policy formulation and implementation primarily on ensuring stable supply and price for their citizens. Rice exporters Cambodia, Thailand and Vietnam give more consideration in strengthening their position in the global rice trade through improving the rice varieties for export, greater state support for farmers and export-oriented rice businesses such as rice pledging schemes and tax incentives, and making prices of rice exports on a par with or lower than their competitors.

The rice-exporting and -importing countries of the region also differ when it comes to how government entities oversee the rice industry. A single government entity is tasked to oversee the conduct of rice trade, and stable rice supply and prices in the rice-importing countries of Indonesia (Perum BULOG), Malaysia (BERNAS) and the Philippines (National Food Authority or NFA). On the other hand, the rice-exporting countries of Cambodia, Thailand and Vietnam have multiple government agencies, usually being led by the Agriculture Ministry, that oversee and regulate the rice industry instead of having a single dedicated unit.

The extent of state support to the rice industry differs among the six countries. The governments of Cambodia, Thailand and Vietnam extend all forms of support, ranging from subsidies to tax incentives to greater access to credit, to strengthen both farmers and entrepreneurs, especially those who are engaged in selling rice to foreign markets. The Malaysian government gives more than adequate support only to Bumiputera rice farmers and entrepreneurs. The Indonesian government extends support to the rice industry by prioritizing domestic acquisition of paddy and milled rice before resorting to limited importation. It is only the Philippine government that lacks in giving appropriate support to the rice industry because of its inconsistency in terms of economic policy formulation and implementation despite its declaration that food security is one of its top priorities.

The ability to control rice smuggling, hoarding, price speculation, graft and corruption, and other rice trade-related illicit practices vary among the six countries. Vietnam and the Philippines are struggling to address the aforementioned activities,

especially graft and corruption cases, hoarding of paddy and milled rice stocks, and rampant and blatant smuggling. On the other hand, Cambodia, Indonesia, Malaysia and Thailand are able to relatively control the proliferation of such practices through efficient law enforcement and prosecution of personalities or entities involved.

Strengths

The main strength of the rice value chains in all six countries lies in the direct links that the actors, specifically the intermediaries, have with the communities where their operations are based.

The intermediaries operate within farming communities; and work directly with farmers, cooperatives, small businesses and even fellow intermediaries for many years. Such a set-up enables them to have first-hand knowledge of the farming methods, rice varieties and local customs within each locality, which they use in their business operations. At the same time, they establish close ties with farmers and residents, earning their trust and confidence and doing transactions with them easily. This is the reason why farmers and small businesses prefer doing business with intermediaries, whom they know personally and find more trustworthy, over government buying agents or middlemen coming from another community or region.

Intermediaries offer support to farmers. In areas where there is minimal presence or total absence of support from the government, larger private entities such as banks and financial institutions, and even of some private traders and middlemen, intermediaries can take over their functions and offer the same to farmers and small businesses. In all six countries, intermediaries, cooperatives and small businesses, act as informal lenders, extending monetary and non-monetary forms of credit in exchange for paddy or milled rice as either full or partial payment. They also offer transport services to clients who are based in either inaccessible communities or those with poor infrastructure, with them being paid partly or in full with paddy or milled rice.

The traditional rice value chain is a major contributor to the economy of farming communities and regions. Income being generated from transactions conducted by various actors is channeled back into the economy, resulting in mutual benefits for them. Intermediaries that act as substitutes to government and some private participants are able to develop systems in finance and credit, production, marketing and distribution that result in economic gains for both the stakeholders and the community.

The intermediary-dominated rice marketing and distribution channel has been in existence for years. Farmers, small businesses, intermediaries and other actors in the rice value chain have accepted the existence of the complex chain by adjusting

Suspected smuggled rice stocks confiscated by the Bureau of Customs (BOC) agents in Cebu, Philippines.

A rice boat, which carries paddy from farms to the mill, in Chau Doc, Vietnam

A worker uses a tractor to spread paddy at a rice mill in Suphan Buri Province, Thailand.

their conduct of transactions to the system and considering it as a "standard practice" in rice trading. Reforming the scheme will be difficult and will meet resistance from stakeholders, hence the greater likelihood that such rice value chains will remain in place in the years to come.

Weaknesses

The rice value chains in Southeast Asia, despite being deeply-rooted among farming communities and well-accepted by farmers, consumers and other stakeholders, have their flaws.

Operating in multiple and often distant locations means tough logistical challenges for the actors. Transportation costs are high as paddy or milled rice is usually being handled manually and hauled by vehicles or small boats through poor or non-existent infrastructure. In addition, fuel costs have been consistently rising through time, causing the already high transportation and vehicle maintenance costs to increase further.

The involvement of multiple intermediaries who perform multiple functions, and operate uncoordinated and overlapping activities result in high labor costs. Intermediaries hire laborers, who haul and transport paddy or milled rice from one place to another, and agents, who conduct transactions on their behalf so that they can operate in more than one locality. To cope with high labor costs, they either charge higher commissions and other fees or place a higher mark-up on the paddy or milled rice that they sell, leading to higher rice prices.

As the rice value chains cover multiple locations and involve multiple intermediaries, marketing costs increase, leading to higher prices. Operating in multiple locations with often poor or non-existent infrastructure result in higher fuel, labor, hauling and transportation expenses, which intermediaries indirectly pass on to consumers by placing a higher mark-up on the prices of paddy or milled rice that is sold to fellow intermediaries or directly to consumers. Aside from that, they also charge their clients commissions and other fees for every transaction, the costs of which are eventually passed on to consumers through higher rice prices.

Maintaining high quality of paddy and milled rice for both domestic and foreign consumers is difficult in a lengthy and complicated rice value chain. This is the case in Vietnam, where several rice stocks were found to be contaminated with chemicals or are wanting in terms of quality upon receipt by their export customers. Unnecessary wastage and spoilage also occur during the process of production, processing, marketing and distribution of rice from the

farmer to the consumer due to factors such as multiple destinations, long period involved in processing and distribution, and lack of storage facilities and other infrastructure.

The complicated nature of the rice value chains make it vulnerable to illicit activities and abuses. Middlemen and traders are notorious for charging farmers exorbitant rates especially to those who secure loans and other forms of informal credit, deliberately manipulating the supply and prices through activities such as hoarding and price speculation, and smuggling. Corrupt government officials and employees take advantage of the opportunity by asking for bribes from the intermediaries; and even involving themselves in smuggling, hoarding and other price speculation activities. Governments throughout the region are able to curb illicit activities and abuses by prosecuting individuals and entities who are found guilty of such offenses but fail to put an end to abuses and illicit activities.

Recommendations

The following recommendations are proposed to ensure sufficiency, efficient distribution and marketing of rice as well as its stable supply and pricing:

- Develop new and improved varieties of rice, and production and processing techniques to increase the supply of the grain that will be available for both domestic consumption and export;
- Improve quality control methods for both paddy and milled rice that are consumed domestically and sold overseas;
- Enhance access of farmers to credit, new production and processing technologies, and processing and marketing facilities;
- Enhance access to credit and other forms of financial and non-financial support, and offer tax relief and other incentives to small- to medium-scale rice businesses, especially those that are engaged in export, to increase capital and incomes, and promote competitiveness;
- Offer more competitive buying prices to farmers for paddy rice and small-scale millers for milled rice to increase incomes but keep them at a reasonable levels to prevent unnecessary increase in wholesale and retail prices;
- Simplify the process of issuing business permits, and import or export licenses to encourage more entrepreneurs to join the rice trade;
- Construct new and enhance existing infrastructure such as roads, harvest and post-harvest facilities, storehouses and market areas to improve rice processing, distribution and marketing;
- Open more accessible government buying stations, especially in far-flung and inaccessible rice farming communities, to widen farmers' options for selling their produce and increase the supply of available paddy rice for milling;
- Enforce stricter policing and customs control of border areas to prevent rice smuggling;
- Prosecute corrupt government officials and employees, and traders who are involved in rice smuggling, price speculation activities, hoarding and other illicit activities; and
- Increase regional cooperation among Southeast Asian countries to boost the rice trade, create new opportunities for farmers and rice-based businesses, and curb smuggling and other illicit activities.

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Polymer Electrolyte Systems Based on Carrageenan for Solid State Dye-sensitized Solar Cell (DSSC)

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The conversion of solar radiation into electricity has been a promising technology. The solar cell which is based on silicon has a solar power conversion efficiency of 15-24%. However, since silicon is expensive, it makes the cost of manufacturing the silicon-based solar cell prohibitive. Thus, new generation alternatives are highly desired (Gunes, 2008). The dye-sensitized solar cell (DSSC) has been seen as a potential alternative due to its tunable properties (Dye-Sensitized Solar Cells, 2013). The Gratzel configuration of DSSC (efficiency 7-11%) uses Ruthenium dyes as sensitizers, Titanium dioxide (TiO_2) as the nano-semiconductor material, and a redox solution (I_3^-/I^-) as the electrolyte system (Gcell, 2015). The redox solution allows for the transfer of electrons between two materials. However, the electrolytes in a volatile medium, as opposed to a solid electrolyte system, limit the DSSC stability because the liquid evaporates. The device requires perfect sealing. The development of a solid electrolyte system has been highly sought to improve stability.

This project, which received support from the Philippine Council for Industry, Energy and Emerging Technology Research

The **Center for Natural Sciences and Ecological Research** (**CENSER**) is the research arm of the College of Science (COS). Initially established as the Environmental Research Center (ERC), it had the mandate to encourage and nurture scholarly activities related to the environment among the COS faculty. At its inception, ERC offered administrative support for projects by way of providing clerical assistance, facilitating the processing of contracts for personnel, and fund management and auditing, among others. Today, the former ERC has evolved into the CENSER, a dynamic conduit for excellent scholarship in the natural sciences and mathematics. It hosts the externally-funded research projects of COS faculty and provides basic administrative and clerical services.

There are 5 research units under CENSER: Alfred Shields Marine Station (SMS); Molecular Science Unit (MSU); High Performance Computing Lab (HPCL); Biodiversity Unit (BU); and, Materials Science and Nanotechnology Unit (MSNU). The first three units (SMS, MSU, and HPCL) maintain core facilities which house a common pool of equipment essential to the operation of their respective research areas. The MSU initially received considerable funding support from the University through the initiative of the late Bro. Andrew Gonzalez FSC to build its laboratory at the Science and Technology Research Center. Later, additional funding was provided to set up the HPCL facility at the St. Joseph's building. Because of its unique nature, SMS receives its operating budget from the University. The common pool of equipment in these core facilities is shared among faculty researchers and is primarily (but not exclusively) for their and their apprentices' use. This streamlined set-up is aimed at building a critical mass of research-oriented faculty in COS.

& Development (DOST-PCIEERD), the DLSU-URCO, and the DLSU Center for Natural Sciences and Ecological Research (CENSER), explores the solid-electrolyte system where the electrolytes are incorporated in a bio-based polymer matrix (Kang, 2005). Bio-based polymer systems such as polysaccharides have been found to be good alternatives matrices compared to synthetic polymer due to their high degree of polymer networks, good chemical stability and ready availability. Carrageenans, which are abundant in the Philippines, were explored for use as electrolyte matrix for application in DSSC.

What makes the use of carrageenan highly suitable as a polymer matrix on which the redox couple will be embedded are its chains, which contain sulfate ester groups where the redox couple can anchor. The ability of carrageenan to form helical structure allow for possible formation of ion channels, facilitating efficient charge transport within. Its solubility in water and its ability to form into gel and thin films allow ease of fabrication and better interface to the dye, TiO_2 and the glass electrode components of the cell. Moreover, the use of the stable, cheap, and readily available carrageenan as a component of DSSC provides an impetus for new application of this natural polymer, thereby helping save the ailing seaweed growing industry in the Philippines.

Discussion of Results

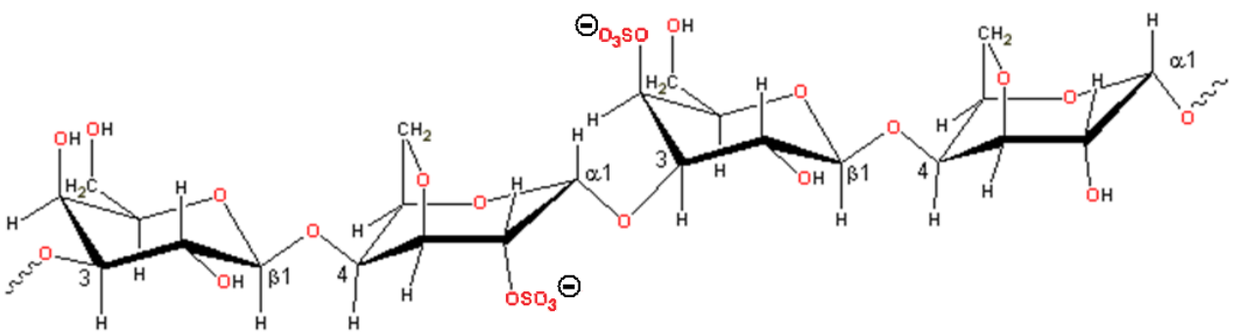
The preparation of solid electrolyte system is dependent on the choice of the polymer matrix. The natural polymer carrageenan exists in different forms depending on the location, distribution, and the content of the sulfate ester groups. The most common forms of carrageenans are lambda, kappa and iota. The three carrageenan forms were specifically screened for film formability because the formation of the solid electrolyte matrix depends on the following factors: (1) solubility of the polysaccharide in the preparation media, (2) its ability to form gel or film and (3) its stability under fabrication conditions. The screening revealed that the κ-carrageenan is the most ideal for film formation.

κ–carrageenan is a linear polysaccharide used extensively in the food industry. Its chemical structure (Figure 1) consists of repeating galactose units and 3,6-anhydrogalactose (3,6 AG), both sulfated and non-sulfated. The units are joined by alternating alpha 1-3 and beta 1-4 glycosidic linkages (Imeson et al., 2000). The polymer chains of κ-carrageenan bear a negative charge because the ester sulfates are always ionized even under strongly acidic conditions (Whistler et al., 1997) making them sensitive to ionic interactions with cations.

Figure 2 shows that the negative sulfate groups (yellow) are positioned outward the helix. This conformation makes it ideal for electrostatic interaction with cations.

Thereafter, the cyclic voltammetry (CV) was determined. CV is defined as an "electrochemical technique which measures the current that develops in an electrochemical cell under conditions where

Figure 1. Structure of κ-carrageenan



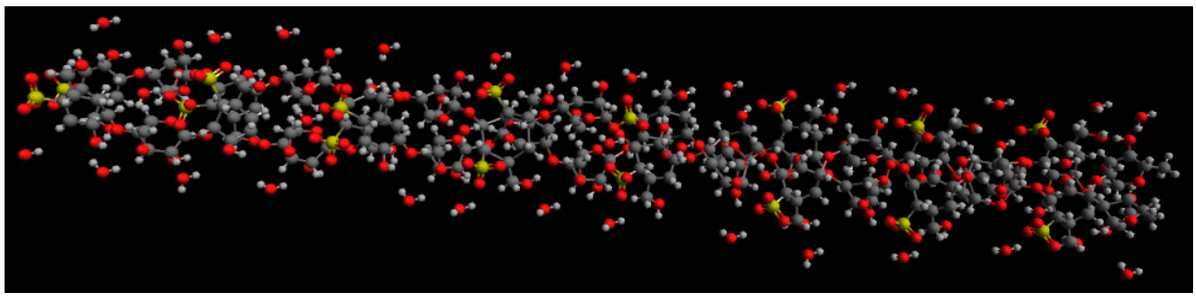


Figure 2. Modeling of κ-carrageenan using Avogadro software: Gray = Carbon, White = Hydrogen, Red = Oxygen, Yellow = Sulfur

voltage is in excess of that predicted by the Nernst equation." The study found that the CV of the I_3^-/I^- redox couple in a gel system had an almost reversible profile with peak current ratio (I_{low}/I_{high}) close to "1" and the peak potential separation (□E) is considerably good for a 2-electron system. This means that the carrageenan gel system, which consists of excess water molecules within the three-dimensional network of κ-carrageenan chains, does not impede the redox process and the transport of electrolytes making it highly suitable for DSSC application (Camacho, et al. 2011).

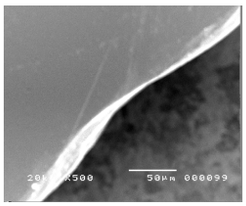
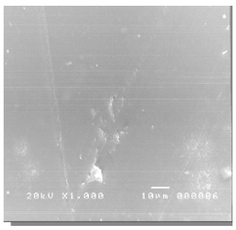
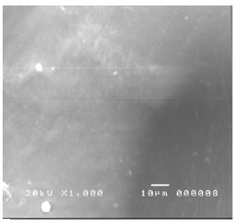
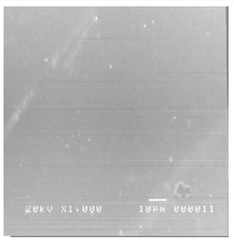
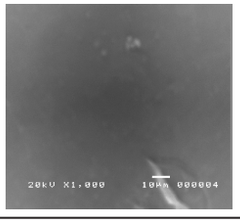
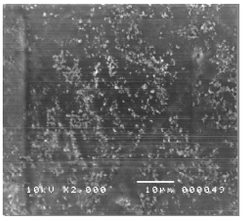
Several electrolyte systems were also investigated. However, it was the use of κ-carrageenan/iodide/I_2 system that showed promise. Table 1 presents the results of the investigations on the different iodide salts using the four-point probe Van der Pauw method. It shows the various film systems and their corresponding electrical conductivity. Table 1 reveals that TBAI:I_2 is the most conductive salt system. It is 2.5 fold more electrically conducting than the pure carrageenan system.

The behavior of the redox couple I^-/I_3^- was further assessed using three-electrode set-up cyclic voltammetry (Figure 3). The redox behavior of the I^-/I_3^- system in binary solvent system acetonitrile and water (liquid) and in □-carrageenan gel-state (quasi-solid state) showed two redox couples which indirectly indicate the migration of the redox ions, iodide and tri-iodide ions, in the 3D network of the □-carrageenan matrix (Tang et al., 2014). On the other hand, the control electrolyte composed of the lithium iodide and iodine in the binary solvent lacks one of the cathodic peaks current, which may indicate a less efficient redox process. The more efficient redox process in the □-carrageenan containing electrolytes may be due to a more effective separation of the cation and iodide ion. The results indicate a quasi-reversible process favoring the reduction process over the oxidation process. Hence, the rate of reduction is faster than the rate of oxidation for all the □-carrageenan electrolyte systems.

With regard to Figure 3, the working electrode used was a glassy carbon and the counter electrode used was the Pt. Scan rate, 100 mV/s. The control (CTRL) was 25% of 4:1 LiI/I_2 in water and acetonitrile.

The fabricated DSSC using □-carrageenan as polymer matrix for the I^-/I_3^- redox couple was characterized by finding its current potential (IV) curve under illumination with Air Mass (AM) 1.5 solar simulator in both aqueous Tetrahydrufan (THF-Water) and non-aqueous Dimethyl sulfoxide (DMSO) systems.

Table 1: Surface morphology of gel-state 1% weight/volume (w/v) κ-carrageenan films containing different positively-charged ions (cations)

Iodide salts (25% of the mole of sulfate ion in κ-carrageenan)	Surface morphology (SEM image)	Thickness, μm	Electrical conductivity[a], S/cm
Pure κ-carrageenan		20.4 ± 0.361	$0.127 \pm 1.58 \times 10^{-3}$
$LiI:I_2$		20.5 ± 4.6	0.300
$NaI:I_2$		47.4 ± 34.8	0.0964
$KI:I_2$		32.9 ± 10.0	0.281
$TMSI:I_2$		26.7 ± 4.1	0.189
$TBAI:I_2$		15.6 ± 0.21	0.326 ± 0.011

[a]Measured using four-point probe Van der Pauw method

Figure 3. Cyclic voltammetry of the κ-carrageenan/salt/I_2 electrolyte using different salts, measured in the range from -2000 millivolt (mV) to 2000mV (vs. the reference electrode silver/silver chloride (Ag/AgCl))

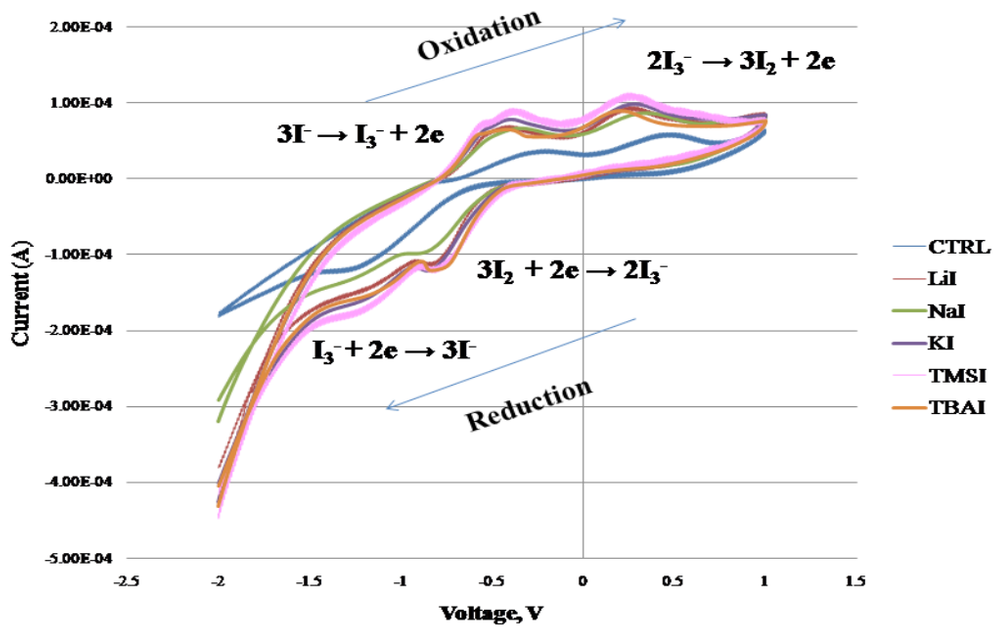


Table 2: Solar cell parameters for aqueous κ-carrageenan electrolyte-based DSSC using *100* mW/cm² AM 1.5 solar simulator illumination

Electrolyte	Open Circuit Voltage V_{oc} (V)	Short Circuit Current Density I_{sc} (mA/cm²)	Fill Factor FF	Solar Energy Conversion Efficiency η (%)
Aqueous system				
Iodolyte	0.695	6.444	0.521	2.333
LiI:I_2	0.695	0.0536	1.33	0.050
NaI:I_2	0.790	0.0362	0.148	0.004
KI:I_2	0.746	0.100	0.819	0.061
TMSI:I_2	0.776	0.0414	0.152	0.005
TBAI:I_2	0.778	0.0817	0.765	0.049
Non-aqueous system				
KI:I_2	0.650	2.646	0.552	0.950
TMSI:I_2	0.618	1.961	0.500	0.607
TBAI:I_2	0.713	2.652	0.568	1.075

The aqueous fabricated solar cells have relatively good open-circuit voltage, V_{oc}, under AM 1.5 solar simulator illumination. The V_{oc} refers to the difference between the Fermi level of the semiconductor and the electrochemical potential of the redox pair (Paoli, 2004). Generally, the decreasing trend in the open-circuit voltage as the size of the

counter cation decreases is attributed to the ability of smaller cations, such as lithium, to be adsorbed on the surface of the titanium dioxide (TiO_2) layer, which shifts the conduction band to a much lower energy level (Paoli 2004; Lai, 2009). The low short-circuit current can be attributed to several factors: (1) low redox couple concentration; (2) inefficient charge-transfer resistance in the platinum/electrolyte interface relative to the control; and (3) the presence of water in the electrolyte system.

The presence of water molecules weakens the titanium dioxide (TiO_2)-dye binding. Water molecules tend to deplete the thiocyano or SCN-groups of the dye resulting in the reduced performance and deterioration of the solar cell (Yang, 2011). When light is irradiated to the solar cell, it was proposed that water molecules bound to the titanium dioxide would be converted into a radical ion which may attack the dye molecules leading to the deterioration of the cell (Tateyama, 2011). Removing water and using non-aqueous system, DMSO, resulted in an improved efficiency.

Conclusion

Polymer electrolyte systems using κ-carrageenan have been developed showing almost reversible redox processes. DSSC configurations, especially those employing the non-aqueous system, show promise with an efficiency rate reaching 1.075%. The project team, therefore, recommends addressing the stability issues as well as optimizing the fabrication protocol.

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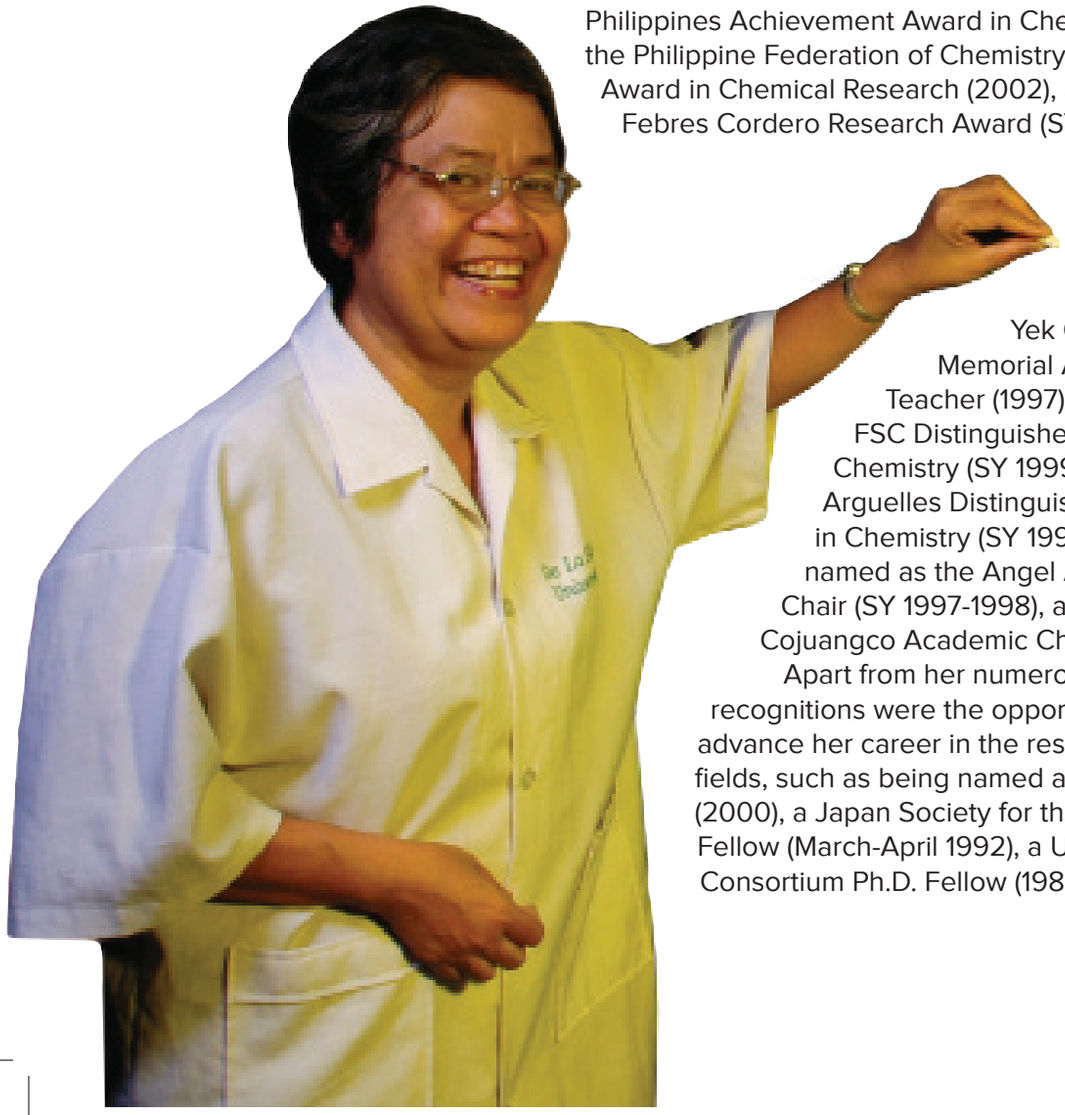
Dr. Consolacion Y. Ragasa

With over 30 years of outstanding contribution to the Lasallian community Dr. Consolacion Ragasa has been among the successful academicians, researchers, and leaders in the university's pursuit of excellence, particularly in the chemical sciences, since 1981 when she started as a lecturer.

This UP-educated researcher and academician has been cited as the De La Salle University-Science and Technology Complex Pioneering Research Professor in September 2013, and recognized with the Pillar of Lasallian Excellence Award in Research in October 2013.

Her dedication to continuing the development of research and knowledge in her chosen field has been recognized through her inclusion in the Marquis Who's Who for Contributions to the Field of Science (2011); Leading Scientists of the World, International Biographical Centre of Cambridge, England (2011); Outstanding Scientists of the 21st Century – 1st edition, International Biographical Centre of Cambridge, England (2007); Marquis Who's Who in the World -25th Silver Anniversary Edition (2007); and Marquis Who's Who in Medicine and Health Care (2006).



She also received the National Research Council of the Philippines Achievement Award in Chemical Research (2003), the Philippine Federation of Chemistry Societies Achievement Award in Chemical Research (2002), and the St. Miguel Febres Cordero Research Award (SY 2000-2001).

Ragasa's notable achievements in the academic field made her a worthy recipient of the Kyu Yek Chiong & Tan Chun Tee Memorial Award for Outstanding Teacher (1997), Bro. Lewis Parrot, FSC Distinguished Professorial Chair in Chemistry (SY 1999-2008), and the Angel Arguelles Distinguished Professorial Chair in Chemistry (SY 1998-1999). She was also named as the Angel Arguelles Academic Chair (SY 1997-1998), and the Don Jose Cojuangco Academic Chair (SY 1991-1997).

Apart from her numerous awards and recognitions were the opportunities for her to advance her career in the research and academic fields, such as being named a university fellow (2000), a Japan Society for the Promotion of Science Fellow (March-April 1992), a UP-AdMU-DLSU Consortium Ph.D. Fellow (1984-1988), and a recipient

of the Australian Universities International Development Program Research Grant (June-December 1987) and the DLSU Challenge Grant (1st term AY 2012-2013 to 3rd term AY 2012-2013).

She also received research grants on the following studies entitled "Isolation and Structure Elucidation of the Chemical Constituents from the Dichloromethane Extracts of Twelve Philippine Endemic Cycas Species" from CHED-PHERNet (December 2014 to November 2015); "Isolation, Structure Elucidation, and Cytotoxicity Studies on Six Plants" from DLSU-STC (May 2014) and URCO/SF (1st term AY 2014-2015 to 3rd term AY 2014-2015); "Isolation, Structure Elucidation, and Antimicrobial Assay of Secondary Metabolites from Some Plants of the Family Compositae" NRCP project (3rd term SY 2005-2006 to 2009), and FU/S 2 06 (2nd term SY 2006-2007 to 1st term SY 2007-2008); "Isolation, Structure Elucidation, and Antimicrobial Assay of Secondary Metabolites from Six Philippine Medicinal Plants – 13" from FU/S 1 04 (2nd term SY 2004-2005 to 1st term SY 2005-2006); "Isolation, Structure Elucidation, and Antimicrobial Assay of Secondary Metabolites from Five Philippine Medicinal Plants – 19" FU 1 03 (2nd term SY 2003-2004 to 1st term SY 2004-2005); "Isolation, Structure Elucidation, and Antimicrobial Assay of Secondary Metabolites from Three Philippine Medicinal Plants," Research Faculty Grant #39 (UERF) (2nd term SY 2002-2003 to 1st term SY 2003-2004); "Screening for New and Bioactive Compounds from Plants of the Family Leguminosae – 18" RP-F RP (URCO/SF/CRF) (SY 2001-2002); and "Screening for New and Bioactive Compounds from Philippine Medicinal Plants" #25 RP (URCO/CRF) (SY 1999-2000).

Ragasa also received URCO/SF grants for her studies "Isolation, Structure Elucidation and Antimicrobial Assay of the Chemical Constituents of the Dichloromethane Extracts of *Samanea saman* and *Artocarpus altilis*" (3rd term AY 2012-2013 to 2nd term AY 2013-2014); "Bioactivities of the Crude Dichloromethane and Aqueous Extracts and a New Triterpene from *Glinus oppositifolius*" (2nd term AY 2012-2013 to 1st term AY 2013-2014); "Isolation, Structure Elucidation and Bioactivities of Secondary Metabolites from Three Philippine Medicinal Plants" (2nd term SY 2011-2012 to 1st term SY 2012-2013); "Isolation, Structure Elucidation, and Bioassay of Secondary Metabolites from *Barringtonia asiatica*" (2nd term SY 2010-2011 to 1st term SY 2011-2012); and "Isolation, Structure Elucidation, and Bioassay of Secondary Metabolites from Endemic Philippine Medicinal Trees" (2nd term SY 2007-2008 to 1st term SY 2008-2009).

Ragasa also imparts her vast experience as an academician and researcher through her professional involvement with the Phytochemical Society of Europe (from 2007 to the present), the American Chemical Society (2005-2008), the Philippine-American Academy of Science and Engineering (2007-present), and the Philippine Association for the Advancement of Science (2005). She is also a member of the Integrated Chemists of the Philippines board of directors (1996), Kapisanan ng mga Kimiko ng Pilipinas, UP-Chemistry Alumni Foundation, Regional Network for the Chemistry of Natural Products, Organic Chemistry Teachers Association, Natural Products Society of the Philippines board of directors (1999-2001), and New York Academy of Sciences (1995). She has been a regular member of the National Research Council of the Philippines- Division X since 1999, also serving as its vice-chairman (2004-2009) and an associate member (1994.)

Her expertise in the study of chemistry was recognized with her appointment as a member of the editorial boards of the *Advances in Biomedicine and Pharmacy* (2014), *The Scientific World Journal* (2013), *Pharmacologia (2013), Journal of Pharmaceutics* (2012), *American Journal of Life Sciences* (2012), *American Journal of Research Communication* (2012), *Journal of Botanics: Targets and Therapy* (2010), *Philippine Science Letters* (2008), *Philippine Journal of Science* (January 2003), and *Manila Journal of Science* (2000-2002; 2010).

Ragasa has also published over 200 research articles as contributions to the growing number of studies in the field of pharmaceutical, biological, and chemical

sciences. Some of her researches focus on chemical constituents and bioactivities of various plant species, the latest of which is an investigation into the chemical constituents of *Cycas zambalensis* (*Chemistry of Natural Compounds*, 2016). Other recent researches also delve into the Terpenoids and Sterols from Cycas vespertilio (*Chemistry of Natural Compounds*), Phenolics from Knema stellate (*Chemistry of Natural Compounds*, 2015), Angio-suppressive effect of sterols from Ardisia pyramidalis Cav Pers on duck chorioallantoic membrane (*Pharmaceutical Chemistry Journal*, 2015), to name a few.

Her works appeared in various local and international journals including the *Chemistry of Natural Compounds; Pharmaceutical Chemistry Journal; Brazilian Journal of Pharmacognosy*; *Research Journal of Pharmaceutical, Biological, and Chemical Sciences*; *Der Pharma Chemica*; *Journal of Applied Pharmaceutical Science*; *International Journal of Pharmacognosy and Phytochemical Research*; *International Journal of Pharmaceutical Sciences Review and Research*; *Der Pharmacia Lettre*; *Journal of Chemical and Pharmaceutical Research*; *Phytochemical Society of Europe and Elsevier* (print); *Science Direct* (online); and *Impact Factor.*

Ragasa's studies were also featured in the *Chinese Journal of Natural Medicines*; *Silliman Journal*; *Pharmacognosy Journal*; *American Journal of Essential Oils and Natural Products*; *Natural Product Research*; *Verlag der Zeitschrift für Naturforschung*; *Philippine Science Letters*; *Journal of Medicinal Plants Research*; *Chemical & Pharmaceutical Bulletin*; *Natural Product Communications*; *Philippine Agricultural Scientist*; *Asia Life Sciences*; *Journal of Natural Remedies*; *Manila Journal of Science*; *Planta Medica*; *Philippine Scientist; Kimika*; *Asian Coordinating Group for Chemistry (ACGC) Chemical Research Communications*; *NRCP Research Journal*; *CvSU Research Journal*; *Philippine Journal of Science*; *Journal of Research in Science, Computing, and Engineering*; *Journal of Asian Natural Products Research*; *Journal of Research in Science and Engineering*; *Phytochemistry*; and *Agham*.

She also presented papers and delivered lectures at the Philippine Chemistry Congress; Asian Federation of Laboratory Animal Sciences/Chinese-Taipei Association of Laboratory Animal Sciences in Taipei, Taiwan (Nov. 9, 2010); Philippines Association of Laboratory Animal Science (May 21, 2010); 76th NRCP General Membership Assembly (March 2010); NSTW 2009 Exhibit – Metro Manila Health Research and Development Consortium; Osaka U-DLSU Conference (September 2008); 10th S & T Congress (July 2008); 2nd PICYC at the Universiti Sains Malaysia in Penang, Malaysia (June 2008); FSC Distinguished Professorial Chair in Chemistry Lecture (March 2008); Eurasia Conference (January 2008); PAASE Conference (February 2007); Bro. Lewis Parrot Professorial Lecture (March 2005); Research Faculty Lecture Series (October 2004); Asia-Pacific Conference on Analytical Science (February 2002); Natural Products Convention; International Symposium on Biologically Active Natural Products (December 1999); 3rd NPSP Annual Convention (December 1999); Angel Arguelles Inaugural Professorial Lecture (March 1999); Malaysian Chemical Congress (1995); and the 4th Clara Y. Lim-Sylianco Lecture Series (1995), among others.

Ragasa finished her undergraduate, master's, and doctoral degrees in Chemistry at the University of the Philippines in 1977, 1983, and 1990, respectively. She is currently a full professor 10 at DLSU, and has served as the vice-chairman of the university's Chemistry Department for SY 1994-1995.

She also held other positions such as science research specialist 4 at the Philippine Council for Health Research and Development (1982-1983), planning officer 2 at the Department of Science and Technology (1980-1981), and science research associate 2 at the UP-NSRI (1978-1979).

MY PERSONAL IMPRESSIONS OF DR. CONSOLACION RAGASA

by Dr. Glenn Alea

Any member of the Chemistry Department can attest that Dr. Consolacion Ragasa, Connie to her colleagues and friends, is a prolific researcher who is passionate about her craft. Her résumé boasts of an impressive list of research publications, awards, and other sterling achievements. Despite these accomplishments, she remains a humble person with a high degree of integrity and who is constantly animated by an intense dedication to her craft, and a zeal to generate new knowledge in her field as well as to encourage her colleagues to do the same.

Dr. Ragasa and I started out as colleagues in the Chemistry Department. I was hired by the department at the time when I was studying for my master's degree while she was pursuing her doctorate. She became my master's thesis adviser, which paved the way for our friendship and collegiality. Being her mentee, I was witness to how intensely focused she is on research. Nevertheless, she was not spared of the usual struggles that graduate students experience, like the inability to focus on the research at hand, short of totally abandoning it. Her colleagues cannot tell how or when she started to muster knowledge and ability at becoming the extremely-focused researcher that she is now. They simply described the transformation as abrupt.

Interestingly, a few people know that, Dr. Ragasa is an amazing bowler. I find it amusing and at the same time unbelievable that although she can barely see if the bowling pins are already standing upright at the far end of the lane—she would ask me "nakatayo na ba yung pins," she would still manage to make a strike or hit her targets. I assume that it all boils down to memory and focus—the mastery of a specific technique honed by several repetitions, which is crucial in perfecting any research exercise.

To say that she is *makulit* as a mentor and teacher is an understatement. She demands a lot from her students but is supportive of them to make sure that at the end of every classroom or laboratory session, they shall have gained substantial amount of learning. Her experiential knowledge amassed from many years of research, and extensive field and laboratory experiments have served to enrich the learning experience of her students. Her passion for her craft has been evident on several occasions. There were instances when totally oblivious of the time, she would send a student a text message in the middle of the night about a research task she had assigned.

What her students admire in her is her hands-on approach; and what inspires her mentees is the way she takes advantage of every opportunity to brag about them and their achievements to her colleagues. As Dr. Vincent Ng, one of her recent mentees, puts it, "*para ka niyang manok, pambato.*" She looks after the welfare of her students and sees to it that they are honed to perfection."

One quality of Dr. Ragasa which is oftentimes overlooked is her unselfish and nurturing attitude toward her colleagues and mentees. I have seen many instances when she would go out of her way to actually encourage her colleagues in the department to engage in research because she would like them to also reap the fruits of research such promotions, contract renewals, grants, and other incentives. She would even share her research incentive with her mentees/collaborators as a form of encouragement or as a token of her appreciation for their hard work.

Equally heartwarming is how she cares for her family. Though preoccupied with research, she always makes time for her mother, siblings, relatives, and friends. She is as dedicated to them as she is to her craft.

Finally, I see in her a wonderful friend, and a professional with remarkable work ethic and dedication. She possesses the right amount of competitive drive to excel, and has sustained what I would describe as a "child-like sense of wonder"—of being open to discovering new things and new knowledge.

From a Marine Station to a Full-fledged Ocean Research Center

In May 2013, Br. Ricardo P. Laguda FSC, then President and Chancellor of DLSU approved the establishment of the SHORE Center, to which the existing Br. Alfred Shields FSC Marine Station (Shields Marine Station) would be attached.

The SHORE Center supports the vision-mission of the University by providing significant learning activities to enable faculty and students to generate knowledge and technologies that will foster good stewardship of the seas and coastlines, and lay the groundwork for community development, and social transformation, particularly among the youth and disadvantaged members of the coastal communities.

The **Br. Alfred Shields FSC Marine Station**, formerly the DLSU Marine Biological Station, is an academic facility of the College of Science intended to further class field activities, as well as research and extension undertakings in coastal areas. Located on a one-hectare parcel of land in Sitio Matuod, Barangay Binubusan in the town of Lian, Batangas, the Shields Marine Station is a four-hour drive from the Taft campus. The marine station has the following basic laboratory and field research equipment and facilities: a dry laboratory; a reference collection of corals and seaweeds; computers and various communication and video equipment; a small outrigger boat, SCUBA diving gear, tanks and a compressor; basic housing facilities for faculty and students, including a small kitchen and two 10-bed dormitory rooms, with freshwater supply from a deep well; and a generator for emergency power.

The Marine Station is one of the component units of the Br. Alfred Shields Ocean Research Center (or SHORE Center). The others units are the Seawater Aquarium Laboratory (SAL); the Coastal Biodiversity Stewardship Unit (CBSU); Biodiversity Studies Facility (Biodiv StuF); and the Coastal Habitats and Environments Monitoring Unit (CHEM Unit). Through these component units, the SHORE Center is able to pursue collaborative endeavors with a growing network of schools, and take off from the traditional organizational/disciplinal boundaries that plague existing marine research and training organizations.

The SHORE Center's Goals

The SHORE Center is uniquely positioned being the only research center in DLSU that has two tracks in addition to research: training (non-degree) and community engagement. It seeks to bring Lasallian expertise in education, research and extension to the coastal communities, particularly focusing on students in primary and secondary schools in these communities.

The SHORE Center specifically seeks to:

- develop and implement programs to educate and empower the youth, in particular, and make them active participants in maintaining the health of natural systems, and in implementing coastal management and disaster preparedness initiatives; and involve the local residents, in general, in enhancing natural habitats through rehabilitation, protection, and monitoring;
- pursue an integrated program to foster awareness and concern for local marine biota among the residents of coastal communities, in particular, and the public, in general, by undertaking biodiversity inventories in coastal waters, maintaining and curating these scientific collections, and developing displays and virtual museums;

- maintain long-term monitoring programs on coastal ecosystems such as mangroves, seagrasses, and coral reefs including related climate and water quality parameters to serve as a basis for regular 'state of the coasts' reports for coastal communities, local governments, and other concerned local, regional and national institutions; and
- undertake research and develop technologies for environment-friendly, small-scale food production and livelihood activities for the coastal communities.

Research Track. Marine scientists around the world have written extensively about the valuable role of coral reefs to the global biosphere as they serve to protect the thousands, if not millions, of species of organisms that live within and around them. A considerable number of publications point point to these marine organisms that make up the rich biodiversity of the Earth as potential sources of medicines for diseases that plague humanity. Coral reefs also protect the shorelines, and sustain local economies through tourism and fishing, among others. Recognizing the importance of coral reefs, the SHORE Center undertakes scientific research projects that provide the basis for policy and advocacy that seek to contribute toward protecting, conserving, and rehabilitating the country's coastal and marine resources.

For the period covering AY 2013-2014 to AY 2014-2015, the SHORE Center, with funding from the Department of Science and Technology (DOST) and the Department of Environment and Natural Resources (DENR) has undertaken projects on the state of coral reefs and has determined their resilience or response to the severe impacts of climate change.

- **Surveys of Coral Reefs and Associated Organisms**

  Under a three-year DOST grant, the SHORE Center has undertaken a series of surveys of coral reefs and associated organisms and their habitats (seagrasses, mangroves). The surveys form part of the National Assessment of Coral Reef Environment (NACRE) Program, an initiative to update the government and the public on the current state of the country's coral reefs.

Studies on Human Impacts on Nearshore Environments (SHINE 1): Coral Reefs

This NACRE project 1) maps the distribution of coral communities in representative sites around the Philippines; 2) assesses the current state of these coral communities using commonly used metrics such as hard coral cover and biodiversity, and their vulnerability and resilience to threats such as coral bleaching; and 3) establishes a monitoring system to allow the quantification of changes in the structure of these reefs, and enable projections of their future state based on various scenarios.

Studies on Human Impacts on Nearshore Environments (SHINE 3): Associated Habitats

This NACRE project 1) determines the historical and present extent of mangroves and seagrasses in selected sites around the Philippines; 2) assesses the current state of these associated habitats and fauna employing commonly used metrics such as density, basal area, canopy cover, biomass and biodiversity, and their vulnerability and resilience to threats such as rise in sea level; 3) establishes a monitoring system to allow the quantification of changes in the structure of these habitats, and enable projections of their future state based on various scenarios; and 4) develops and pilot-tests a bio-economic model towards an ecosystem-based management of mangroves and seagrasses.

- **Coral Reef Visualization and Assessment (CORVA) Program**

  The SHORE Center administers a three-year Department of Environment and Natural Resources (DENR) grant to undertake the CORVA Program in collaboration with the University of the Philippines Marine Science Institute. Implemented concurrently with NACRE, the CORVA Program gathers data for DENR's use in drafting zonal policies and guidelines for the national marine protected areas under the National Integrated Protected Areas System (NIPAS).

  Monitoring and Impact Research on Resilience of Reefs (MIRROR 2)

  The main objective of this project is to assess the status of coral reefs in the select NIPAS sites, their vulnerability and resilience to various natural and anthropogenic threats, and the effectiveness of local management interventions.

  The five (5) NIPAS sites which are initially covered by this project are: the El Nido Managed Resource Protected Area; the Siargao Protected Landscape and Seascape; the Aliguay Protected Landscape and Seascape; the Biri-Larosa Protected Landscape and Seascape; and the Verde Island Passage.

Training and Community Engagement Tracks. These tracks provide venues for students to develop and become advocates of biodiversity conservation as well as of the sustainable use and management of marine resources. As a training and extension facility that promotes and sustains societal change, the SHORE Center maintains the following community extension programs:

- **Sea Scouts and Sea Scouts Auxiliary**

  In March 2008, the Shields Marine Station, in cooperation with the Maximo T. Kalaw Institute for Sustainable Development[1] (MTKI), Marilin's Free School[2] (MFS), and the Matuod Homeowners' Association initiated the Talim Bay Sea Scouts Program, which is now the DLSU Sea Scouts Program (SSP). The SSP has sought to develop, introduce, and implement a supplemental curriculum for the MFS. Activities that are held annually are designed to accomplish the goals of the different phases—basic, intermediate, and advance— of the program, with courses in reef, mangrove, seagrass, and marine turtle growth and management, and to incorporate a reward and evaluation system, scholarships, and lectures on first aid, life-saving techniques, camping skills, and public speaking.

  The SSP, which is now under the SHORE Center's CBSU, endeavors to provide relevant, structured, experiential learning to the youth from coastal communities aged 7 to 18 years with the aim of deepening their appreciation and broadening their knowledge about their marine environment. It intends to provide a basis for intervention that will reorient their families and neighbors, and make Sea Scouts capable of helping themselves and their respective immediate communities. The SSP offers an education option that is skills-based, ladderized, community development-focused, and conservation-oriented. It prepares the Sea Scouts to serve as guides, masters and facilitators for beach camps and field trips; assistants and assistant instructors to students undertaking field work; assistants to research and thesis students; assistants to the research and monitoring, and habitat protection and restoration programs; and facilitators in the coastal resource management and disaster preparedness programs.

  Envisioned to expand to other coastal areas in the Philippines through collaboration with other schools, organizations, and institutions, the SSP was brought to Negros Occidental. This was made possible through the initiative of SHORE Center Director Dr. Wilfredo

Y. Licuanan and DLSU-Integrated School Associate Principal Dr. Maricar S. Samson who collaborated with the University of Negros Occidental – Recoletos (UNO-R), making Bacolod City the first ever recipient of the program in the Visayas Region. Nineteen students, aged 10 to 16 years and from four Bacolod City schools, participated.

Sea Scouts Auxiliary (SSA) Organization. This organization is envisioned to complement the DLSU SSP by educating young residents of non-coastal communities on the importance of the coastal and marine environments. It also aims to train them to become stewards of the sea. SSA Organization members are taught the following: the interconnectedness of the land and the sea; the uniqueness of the coastal and marine environments; the different coastal habitats; and the role of SSAs in the protection, conservation, and rehabilitation of the coastal ecosystem.

The SSAs are required to work in partnership with the nearest coastal community Sea Scouts in the management of coastal resources, particularly in the promotion of practices that will help protect, conserve and rehabilitate the country's coast and marine ecosystems; in pursuing coastal resource management initiatives; and in supporting research and development geared towards improving the condition of coastal and marine environments.

The SSA organization is school-based such that all its activities are authorized and recognized by the participating academic institution. The first SSA Organization was formed in March 2013 at the DLSU-Integrated School with Grades 8 and 9 students as members.

- **Classroom Without Walls**

  This program, which was started in 2012, is undertaken by the SHORE Center in partnership with the International School Manila (ISM). The ISM offers a semester-long class called "Changing our World" in collaboration with various non-governmental organizations in the Philippines with the aim of improving the state of the coastal and marine environments in the country. Every February, ISM brings around 20 Grade 8 students aged 13 to 14 years to the Shields Marine Station for a five-day immersion consisting of lectures, group activities, community interaction, and team challenges.

- **Regular Monitoring for the Local Governments of Lian and Nasugbu, Batangas and the Tubbataha Reefs Marine Natural Park (TRMNP)**

  Since 2009, the SHORE Center has been conducting annual monitoring of the state of coral reefs and associated organisms in the municipalities of Lian and Nasugbu in Batangas, and in the TRMNP in Palawan. It prepares an annual report on the state of reefs and associated organisms and provides a copy of this report to the local government units (LGUs) that have jurisdiction over the areas monitored. The reports serve as handy guides for the LGUs in formulating policies and programs to properly manage the reefs in their areas. The monitoring activities also serve as training and support for the research undertakings of graduate students of DLSU and other schools.

Endnotes

[1] The Maximo T. Kalaw Institute for Sustainable Development is a non-governmental organization that focuses on human development through programs that promote equitable and sustainable use of natural resources.

[2] The Marilin's Free School is a weekend free school initiated by Ms. Marilin Matute to provide supplemental learning to children living in nearby coastal sitios of Talim Bay.

Water Disinfection Using Malunggay Seeds

Dr. Sheree Ann T. Pagsuyoin
Engr. John Raymond B. Barajas
Dr. Florinda T. Bacani
Dr. Joost R. Santos
Dr. Aileen H. Orbecido
Dr. Luis F. Razon

The supply of safe drinking water is a continuing concern for much of the world's population. Globally, about 1.7 billion cases of diarrhea are reported annually and unclean water is cited as a primary cause ("WHO | Diarrhoeal disease," 2013). Many rural communities in the Philippines do not have adequate water supply systems and depend on untreated surface or ground water for household use. These communities will be greatly benefited if a low-cost water treatment system that can be implemented at the point-of-use (POU) is available. Many POU water treatment technologies have been established including ceramic-pot filtration (Dankovich & Smith, 2014) and solar disinfection (McGuigan et al., 2012). Many plant materials have also been proposed to be used as water treatment technologies.

The Malunggay as Water Disinfectant

Among the most promising of these plant materials are the seeds of malunggay (*Moringa oleifera*), which have been shown to be effective as a coagulant and as a disinfectant (Kansal & Kumari, 2014). Malunggay has many advantages as a water purification agent. It grows easily in many tropical countries, including the Philippines and all of its parts have found multiple uses including food, medicine, and fuel (Saini, 2016). A low-cost POU implementation of malunggay as a water treatment medium will provide communities with an easy-to-use technology that can be transferred to the community with minimal training and infrastructure costs.

The Project Team

With the help of a grant from Grand Challenges Canada, a team from De La Salle University, the University of Waterloo in Canada, and the George Washington University in the United States set out to develop the concept and determine whether the technology would be appropriate for a small rural community in the Philippines.

The **De La Salle Food and Water Institute** is a consortium between Lasallian institutions belonging to De La Salle Philippines for the purpose of education, research, innovation, and transfer of technology in the different areas of study along the food supply chain. The Institute is guided by the Lasallian mission of generating and propagating new knowledge for human development and social transformation. It seeks to serve the food supply chain requirements of the Philippines in particular and Southeast Asia in general; and takes advantage of the Philippines as one of the platforms of education in the region.

Methodology

The testing was done in three phases. First, with the cooperation of Mayor Joselito Ojeda of Mulanay, Quezon, an inception seminar-workshop was conducted to determine the water supply situation in Mulanay and to ascertain the concerns of the residents with respect to the water supply (See photo below). It was determined that, in addition to the usual concerns about sanitation, the residents were also particularly interested in the sensory qualities of the water, especially its taste.

Mayor Joselito Ojeda, Dr. Florinda Bacani, Mr. John Barajas, and Dr. Sheree Pagsuyoin at the Inception Seminar-Workshop in Mulanay, Quezon

Second, laboratory testing of the effectiveness of the treatment system for microbial disinfection was done in the University of Waterloo (John Barajas et al., 2016). A mixture of activated carbon from rice husk and powdered malunggay seeds was found to be effective in removing *E. coli* from water. Moreover, no carry-over of malunggay proteins that may potentially contaminate the water was found. With the successful results of this testing, the project team envisioned that larger scale testing could be started.

In the final phase of the project, field testing was done in Mulanay, Quezon to observe the actual system performance while being used by the consumer. A pitcher-cartridge system similar to that which is marketed commercially was used (Figure 1).

The cartridge was filled with the malunggay-activated carbon mixture. In this system, untreated water is filled into the reservoir and allowed to trickle through and the treated water could be collected in the pitcher. The pitcher systems were distributed among selected residents of Mulanay, Quezon. Samples were obtained before and after treatment. Residents were interviewed before and after using the malunggay water treatment system.

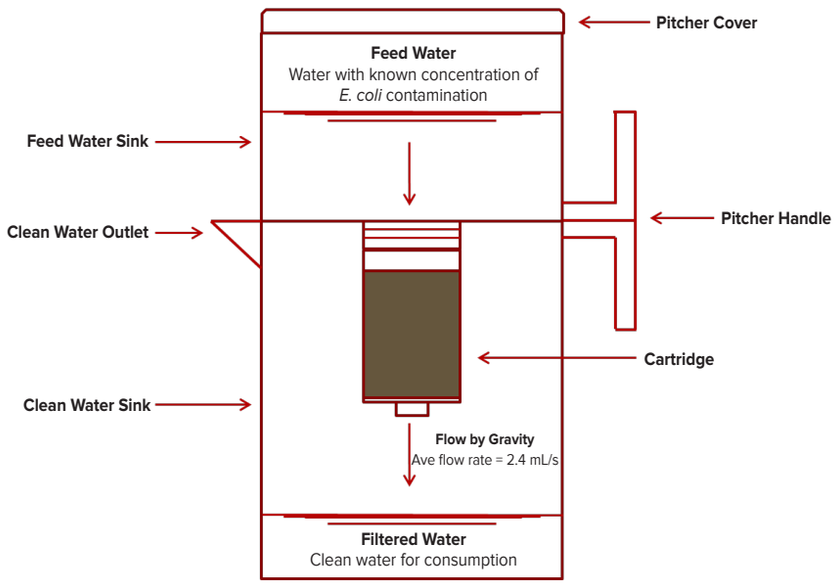


Figure 1. The pitcher-cartridge system

Conclusion and Recommendation

The results of the testing were mixed. Some of the treatment systems performed adequately; some did not. These results indicated that further improvement is necessary before the system could be disseminated more widely.

Research results were presented in a Research Dissemination Forum held in the New World Hotel on November 25, 2015. More details may be found in the following publications (J. Barajas, Latayan, et al., 2016; J. Barajas, Pagsuyoin, & Latayan, 2016; J. R. Barajas & Pagsuyoin, 2015; John Barajas et al., 2016; S.A. Pagsuyoin, Santos, Latayan, & Barajas, 2015; Sheree A. Pagsuyoin, Santos, Latayan, & Barajas, 2015; Santos, Latayan, Pagsuyoin, & Srija, 2015; Santos, Pagsuyoin, & Latayan, 2016) .

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University Research and Coordination Office

The period from AY 2013-2014 to AY 2014-2015 witnessed a succession of two University Presidents: Br. Ricardo P. Laguda FSC (who was President and Chancellor from June 16, 2012 until August 25, 2014 when he was elected by the General Chapter of the Christian Brothers in Rome to lead the Lasallian Mission in Pacific-Asia; and De La Salle College of Saint Benilde President and Chancellor Br. Dennis Magbanua FSC who generously shared his service as the concurrent DLSU Officer-in-Charge to ensure the continued implementation of the strategic plans and projects that Br. Laguda started during his term. During the nine-month transition period, which ran from August 2014 to May 2015, Br. Dennis facilitated the consultation process to support the Board of Trustees in its search for the next DLSU President and Chancellor.

Elected DLSU President Br. Raymundo Suplido FSC, in the *DLSU President's Report* for AY 2014-2015 which focused on the theme "Control (CTRL)-Shift" aptly described the movement within the University during the period of "shifts"—reflected in the seven key "control" areas that measure the University's "committed pursuit of [its vision-mission]", namely, education, research, community engagement, governance, process, personnel, and facilities, as well as key areas for further improvement—the knowledge of which would... bring pride and honor to all the members the Lasallian family.

In the key "control" area of research, significant achievements and milestones were recorded. During the period, the full integration of the DLSU Science and Technology Complex was completed. Several faculty members earned prestigious awards and distinctions during the period: Dr. Kathleen B. Aviso and Dr. Michael Angelo B. Promentilla were named 2013 Outstanding Young Scientists by the National Academy of Science and Technology (NAST) in the fields of industrial engineering and socio-environmental engineering, respectively; Dr. Alfredo C. Robles, Jr. was named 2013 Outstanding Teacher by Metrobank Foundation; Dr. Benito Teehankee was named Outstanding Educator in a Finance-related field: Special Award in Corporate Governance Studies from the Financial Executives of the Philippines (Finex), while Dr. Ma. Andrea Santiago was proclaimed the 2013 Outstanding Paper Winner, *World Journal of Science, Technology and Sustainable Development* by the Emerald Literati Network.

The CLA Social Development Research Center (SDRC) celebrated its 35th year. The event was marked by the holding of the SDRC Congress that featured studies on poverty alleviation, climate change adaptation in Southeast Asia, reproductive and health needs of women with disabilities, and health facility assessment of barangay health stations, while the Lasallian Institute for Development and Educational Research held its 1st National Congress on Action Research in Education. DLSU was the first private university in the Philippines to reach the 1,000th mark in Scopus, the world's largest database of peer-reviewed literature.

New Projects for the Period

The two academic years recorded 159 new internally-funded research projects, broken down as follows: 86 Faculty Research Program Projects, 8 review articles, 35 Special Project Grants, 20 Interdisciplinary Research Projects, and 10 Research Program Workshops Projects. The Special Project Grants are further broken down into: 31 New Ph.D. Grants, 2 General Education Modules, and 2 Thesis/Dissertation Grants. The approved grants for the projects reached a total of PhP 17,331,100.72 drawn from the following resources: Interdisciplinary Research – PhP6,126,829.50; URCO Funds (Faculty Research and Special Project Grants) – PhP5,301,480.22; New Ph.D. – PhP2,122,096; DLSU Science Foundation – PhP1,780,695 and Research Program Workshop – PhP2,000,000.

During the period, the various research centers/institutes reported 64 new externally-funded projects with a total grant of PhP166,918,331.06 from the following funding agencies: Asian Psychological Services and Assessment; Association of Southeast Asian Nations (ASEAN) Secretariat; ASEAN University Network-Southeast Asia Engineering Education Development Network Japan International Cooperation Agency (AUN/SEED-Net JICA); Australian Agency for International Development United/Nations Fund for Population Activities (AusAID/ UNFPA) thru Nossal Institute Limited; AusAID; Australian National University; Commission on Higher Education/Philippine Higher Education Research Network (CHED/PHERNet); Department of Science and Technology (DOST) Central and National Capital Region offices and its different councils and attached agencies, namely: Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), Philippine Council for Health Research and Development (PCHRD), Philippine Council for Industry and Energy Research and Development (PCIERD), and the National Academy of Science and Technology (NAST); Foundation for Women's Rights Promotion and Development (Taipei, Taiwan); Fund for Assistance to Private Education (FAPE); Fundacion Accion Contra El Hambre; Holcim Philippines, Inc. (HLCM); Institute for Sustainable Futures of the University of Technology Sydney; International Development Research Centre (IDRC) through the Universiti Tun Abdul Razak, Malaysia (UNIRAZAK); International Fund for Agricultural Development (IFAD); Knowledge Channel Foundation, Inc.; La Salle Green Hills; Oscar M. Lopez Center for Climate Change Adaptation and Disaster Risk Management Foundation Inc.; Phil-Australia Community Assistance Program; Philippine Business for Education (PBEd); Philippine Center for Print Excellence Foundation, Inc.; Population Services Philippines; Save the Children International; Tanggol Kalikasan; The Sumitomo Foundation; UNILAB Foundation, Inc.; UNFPA; United Board for Christian Higher Education in Asia; United Nations Children's Fund (UNICEF); and the United States Agency for International Development (USAID) Science, Technology, Research and Innovation for Development (STRIDE).

Ongoing/Continuing Projects during the Period

The URCO also monitored other ongoing and multi-year projects: 301 internally-funded and 250 externally-funded projects conducted by faculty members under the various research centers and institutes.

Apart from the aforementioned projects, the URCO also monitored 3 ongoing commissioned researches under the Clean and Green program, 20 approved and 15 completed interdisciplinary projects funded by URCO.

Completed Projects for the Period

There were 142 completed URCO-funded projects and 100 externally-funded projects within the two academic years.

The completed URCO-funded projects were broken down into: Faculty Research Program Projects – 77; Special Project Grants – 39; Interdisciplinary Research Projects – 15; and Research Program Workshop Projects – 11.

Comprising the completed studies under the Special Project Grants were: New PhD. Grants – 15; Sabbatical Research projects – 10; Thesis and Dissertation Grants – 5; General Education Modules for Transformative Learning – 4; Research Faculty Grant projects – 3; and projects that received funding from the St. Miguel Febres Cordero Research Grants – 2.

Meanwhile, the numbers of completed externally-funded projects under the auspices of different centers and institutions were as follows: Center for Engineering and Sustainable Development Research (CESDR) – 47; Jesse M. Robredo Institute of Governance (JMRIG) – 12; Angelo King Institute (AKI) – 8; Social Development Research Center (SDRC) – 8; Lasallian Institute for Development and Educational Research (LIDER) – 7; Advanced Research Institute for Computing (AdRIC) – 6; Center for Natural Sciences and Environmental Research (CENSER) – 6; Center for Business Research and Development (CBRD) – 5; and Bienvenido N. Santos Creative Writing Center (BNSCWC) -1.

In terms of the University priority areas, 231 projects were completed. Of this figure, 131 were internally-funded projects, while 100 were externally-funded. The projects completed by priority areas were broken down as follows: Sustainability, the Environment, and Energy – 78; Living Culture and Contemporary Societies – 76; Learners and Learning Innovations – 34; Food, Nutrition, and Health – 28; and Women, Children, and Family – 15.

Research Productivity and Impact Factor

1000th Mark in Scopus. With a record of 1090 Scopus-listed publications in September 2013, DLSU became the first private Philippine university to reach the 1000th mark in the world's largest abstract and citation database of peer-reviewed literature. This milestone was attributed to the sterling performance of the University's faculty researchers in the last two decades. The figure speaks of DLSU's serious efforts and commitment to produce research and peer-reviewed output for the country and the global community. It is also seen as a challenge for the University to embark on more vibrant and dynamic research thrusts and undertakings.

Research Program Workshops. As part of its role in supporting the development of Centers of Excellence in each of the seven colleges/school of the University, the URCO provides funds for college-based Research Program Workshops (RPWs) that are anchored on a priority thematic area of the respective college/school.

Launched in June 2011, the RPWs have sought to: enhance collaboration among faculty and graduate students in the priority areas of research in the colleges and in the University; provide opportunities for quality scholarly exchange among University community members; facilitate the development of research agenda and plans that have both theoretical and applied significance; and provide the resources and support for the writing and submission of external grant proposals. RPWs are facilitated by a team of faculty members for an entire academic year. Each RPW consists of three phases, with each phase corresponding to a term of one academic year. Phase 1 consists of an organized discussion on the fundamental issues and key literature in the research area; Phase 2 is the venue for crafting research problems and designs to pursue multi- or interdisciplinary studies; and Phase 3 involves the preparation and submission of proposals to external agencies for possible funding.

For the period from AY 2013-2014 to AY 2014-2015, discussions on the principal issues and key literature on the following were held:

Within the two academic years, 34 RPWs generated 17 projects that received generous grants from the following national and international funding agencies: ASEAN University Network/Southeast Asia Engineering Education Development Network/ Japan International Cooperation Agency – US$47,740; Department of Science and Technology (DOST) and National Research Council of the Philippines – PhP300,000; Filipino-French Scientific Cooperation Program – PhP2,455,161; International Development Research Centre – CAD$1,104,140; Newton

Fund – PhP232,696.80; Partnership for Enhanced Engagement in Research, US National Academy of Science – US$300,000; Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development – DOST – PhP10,998,849.04; The Sumitomo Foundation – PhP219,660; and World Bank – PhP1,500,125.

Challenge Grants. To promote research along thematic lines that are aligned with the strategic research thrusts of the University, the Challenge Grants were launched during the Centennial Year of the University in 2011. These research thrusts cover: Food Nutrition, and Health; Sustainability, the Environment, and Energy; Women, Children, and Family; Living Culture and Contemporary Societies; and Learners and Learning Innovations.

This program offers faculty members from diverse research backgrounds and disciplines a venue to collaborate, achieve more innovative and more practicable solutions that address the aforementioned research thrusts, engage in high-impact research, and have greater access to the required external funding.

Proposals should affirm the University's support for research that secure positive, meaningful, lasting and inclusive grown in society and contribute to nation-building by seeking to alleviate poverty; promote peace and social justice; protect the welfare of women, youth at risk, and other vulnerable sectors of society; create wealth and resources to bridge the various societal divides; provide models and avenues for stewardship of God's creation; and influence policy, governance, and the management of institutions.

Within the two academic years, five Challenge Grant Proposals were approved for a total budget of PhP4,533,649.90. These proposals focused on: influencing agricultural

AY	College/School	Title
2013-2014	School of Economics	Experimental and Non-experimental Approaches in Economics for Impact Evaluation Studies
		Moving Towards Sustainable Development and a Greener Philippine Economy
	Gokongwei College of Engineering	Developing Sustainable Solutions to Environmental Problems Associated with Coal-fired Power Plant in the ASEAN Region
	College of Education	Towards 21st Century Literacy
	College of Liberal Arts	Filipino Youth at Risk: Issues and Problems
2014-2015	School of Economics	Quantitative Approaches to Disaster Risk Management
	College of Computer Studies	Examining DepEd Data for Philippine Educational Reform
	Br. Andrew Gonzalez College of Education	K-12 Readiness of Public and Private Schools
	College of Science	Schistosomiasis: A Neglected Tropical Disease. What can we do?
		Climate Change Impacts and Disaster Preparedness – Technologies, Protocols, and Policies Optimized for the Philippine Setting

policy and farm practices based on scientific investigation of determining antibiotic residues in meat tissues of pork, chicken and freshwater aquaculture products and eggs; development of a calibrated multiple-objective linear programming inoperability input-output model for disaster risk management in the Philippines; development of a technology transfer model for the DLSU micro-hydro power (MHP) system technology at Barangay Parina, Apayao for socio-economic sustainability and inclusive development; assessing service learning (SL) current practices at De La Salle University: towards a unified model of institutionalization; and advanced new-Keynesian integrated micro-founded open economy(ANIMO) forecasting model.

Enhancing Research Capability and Providing Support Mechanisms for Research

The URCO, in collaboration with the Office of the VCRI, continued to provide venues for faculty and graduate students to further hone their research and grant proposal writing skills, particularly in the social sciences, business, humanities, and the natural sciences; increase publication productivity by raising the quality of their written outputs and getting research articles published in high-impact journals; training them on data handling and analysis; and familiarizing them with University procurement procedures, particularly relative to requesting for supplies and materials that they need for the conduct of their research.

Proposal and Grant Writing Seminar/ Workshops. The URCO continued its unwavering effort to equip the University faculty, as well as its graduate students with enhanced skills to enable them to productively engage in scholarly and creative pursuits and at the same time apply for outside funding for their research and creative projects. A series of research proposal writing workshops was held for the projects generated through the RPWs, and for faculty in the social sciences, business and related fields, the hard sciences, and the humanities.

Manuscript Writing Sessions. Within the two academic years, eight (8) Manuscript Writing Sessions were organized and hosted by URCO to enable research writers to meet with faculty experts in their fields to discuss strategies and tips on how to prepare their manuscripts for publication. Faculty readers tapped for the sessions were: Dr. Caridad H. Tarroja, DLSU Psychology Department; Dr. Ferdinand D. Dagmang, DLSU Theology and Religious Education Department (TRED); and Dr. Carlo P. Magno, DLSU Counseling and Educational Psychology Department (CEPD). Of the eight papers read, the paper titled "Towards the Development and Validation of the Unified Materials Design Model for ESL Learners: A Sociocognitive Perspective" by Dr. Jessie S. Barrot has been accepted for publication in *The Asia-Pacific Education Researcher*; while another paper, "Learning in a L2: An Analysis of Less Successful Filipino ESL Learners Experiences through Consensual Qualitative Research" by Dr. Marianne Jennifer M. Gaerlan is being reviewed by a journal.

Workshop on Academic Publishing, Publishing in High-Impact Journals and Publication Productivity. The URCO also organized and hosted a series of workshops and roundtable discussions on publishing in high-impact journals with the following resource speakers:

- Prof. Stephen C. Hetherington, visiting professor, University of South Wales
- Dr. Diedre Dunne, publisher, Environmental Science and Health, Elsevier
- Dr. Feorillo P. A. Demeterio III, URCO Director
- Dr. Renato C. de Castro, DLSU International Studies Department
- Dr. Arnulfo P. Azcarraga, DLSU Software Technology Department
- Dr. Michael Angelo B. Promentilla, DLSU Chemical Engineering Department
- Dr. Kathleen B. Aviso, DLSU Chemical Engineering Department

- Dr. Raymond Girard R. Tan, DLSU Vice Chancellor for Research and Innovation
- Dr. Nelson B. Arboleda Jr., DLSU Physics Department
- Dr. Romeo B. Lee, DLSU Behavioral Sciences Department
- Dr. Divina M. Edralin, DLSU Management and Organization Department
- Dr. Cheryll Ruth R. Soriano, DLSU Communication Department

Research Methodology, Data Handling and Analysis. To further hone the skills of faculty on data handling and analysis, the URCO co-sponsored a seminar workshop on Methodological/Research Approaches with RVR College of Business in October 2013. Mr. Frumencio F. Co talked on "Statistical Tools for Research Analysis;" Dr. Lawrence B. Dacuycuy facilitated the workshop on "Model Building;" and Prof. O. Manuel Uy, and principal professional chemist and statistician at the Johns Hopkins University's Applied Physics Laboratory tackled "Having Fun with Your Data (using JMP)."

Other Seminars/Workshops. Apart from the aforementioned seminars and workshops geared toward research and publication productivity, the URCO, in collaboration with pertinent units of the University also organized and hosted informative seminars to ensure the smooth conduct of research activities on campus. It held three sessions on procurement procedures in coordination with the Procurement Office in 2014. In coordination with the Office of the Associate Vice Chancellor for Faculty Resource and Development, the URCO Director gave a talk on Research Opportunities for Academic Service Faculty (ASF) in December 2014, and with a team of DLSU faculty from the different colleges, conducted an ASF Research Writing Fellowship in March 2015.

In February 2014, a lecture on Intellectual Property, Research Ethics, and Patent Checklist was held for the Junior Computer Science Students by University Legal Counsel and IP Director, Atty. Christopher E. Cruz.

Research Dissemination

Recognizing that the research outputs of faculty are useless unless they are communicated and shared with their various stakeholders, the URCO continued to explore and provide venues in this regard.

Symposiums/Forums/Research Updates. The office organized several forums/ symposiums, roundtable discussions, and lectures for disseminating the research results to and eliciting valuable insights from concerned members of the academic community and representatives of pertinent private organizations, government institutions, and the various sectors of society.

- Symposium (co-sponsored with the College of Law) – July 19, 2013
  - "Protecting Consumers from Unfair Contract Terms: Current Law and Suggestions for Reform" by Atty. Lee Mason, University of Hong Kong
- Symposium featuring lectures from the 2013 National Academy of Science and Technology Outstanding Young Scientists (NAST OYS) Awardees – August 2, 2013
  - "Characterizing pore structure—transport property of civil engineering materials with X-ray microtomography" by Dr. Michael Angelo B. Promentilla
  - "Design of robust water exchange networks for eco-industrial parks" by Dr. Kathleen B. Aviso
- Interdisciplinary Research Forum on Biomedical Research in the Philippines – November 27, 2013
  - "Dengue where are you?" by Dr. Ronald R. Matias, Director, Unilab, St. Luke's Medical Center
  - "Sensing HIV infection through cytolic pattern recognition reception" by Dr. Julienne Co, Unilever Phils.
  - "TB" by Dr. Esperanza C. Cabrera, DLSU College of Science
  - "Molecular analysis of liver disease in Asian Filipinos" by Dr. Michael O.

Baclig, research scientist, Research and Biotechnology Division, St. Luke's Medical Center
  - "A database of genetic variation in coronary artery disease in Asian Filipinos" by Ms. Ma. Luisa G. Daroy, research scientist, Research and Biotechnology Division, St. Luke's Medical Center
  - "Hereditary colorectal cancer: Can we prevent it?" by Dr. Ma. Luisa D. Enriquez, DLSU College of Science
  - "Applications of stem cell therapy in the Philippines" by Mr. Mark Pierre S. Dimamay, research scientist, Stem Cell Research and Biotechnology Division, St. Luke's Medical Center
- Interdisciplinary Research Forum on Food Security – November 28, 2013
  - "Food Security: A Multi-faceted Problem" by Dr. Marites M. Tiongco, School of Economics
  - "Current and Future Challenges to Achieving Sustainable Food Security" by Mr. Glenn R. Ricaforte, coordinator, MSTHRM, DLSU College of Saint Benilde
  - "Strategic Risk Analysis of Long-term Climate Variability on Food and Environmental Security" by Mr. Glenn S. Banaguas, DLS-Araneta University
- Interdisciplinary Research Forum on Research Updates on Infectious Diseases – February 4, 2014
  - "Breaking Bad: Enabling Technologies for Malaria and Eradication" by Dr. Rhoel R. Dinglasan, W. Harry Feinston Department of Molecular Microbiology & Immunology, Johns Hopkins Malaria Research Institute, Bloomberg School of Public Health
  - "Eco-Bio-Social Factors of Vector Density – Developing Effective Approaches to Dengue Control in the Philippines" by Dr. Jesusa A. Marco, research fellow, DLSU Social Development Research Center
  - "Isolation and Genetic Characterization of Influenza A Virus in the Philippines" by Prof. Ma. Luisa G. Daroy, research scientist, Research and Biotechnology Division, St. Luke's Medical Center
- Interdisciplinary Research Symposium for Completed Interdisciplinary Research Projects c/o URCO- February 28, 2014
  - "Justice in a Cup: A Linguistic Phenomenological Study of Fair Trade Coffee Farming Experience in the Cordillera" by proponents Dr. Dennis H. Pulido, Dr. Hazel T. Biana, and Dr. Marites M. Tiongco, DLSU School of Economics; and discussants Dr. Ma. Luisa C. Delayco, DLSU Marketing Management Department; Mr. Reynaldo A. Bautista, Jr., DLS College of Saint Benilde Program Director & Strategic Partnership Head
- Interdisciplinary Research Symposium for Completed Interdisciplinary Research Projects c/o URCO – February 21, 2014
  - "Parallel Language Resource (collocated with 10NNLPRS, Day 1) by proponents Dr. Joel P. Ilao, and Dr. Rachel Edita A. Roxas, DLSU College of Computer Studies, and Dr. Raquel Sison-Buban, DLSU Filipino Department; and discussants Dr. Shirley N. Dita, DLSU Department of English and Applied Linguistics, and Dr. Tod J. Allman, Visiting Scholar from Texas, USA
  - "A Comparison of Manual and NLP-supported Discourse Analysis of Twitter-based Comments on the May 2013 elections" (collocated with 10NNLPRS, Day 2) by proponents Dr. Rachel Edita A. Roxas, DLSU Software Technology, Dr. Divina Z. Roldan, DLSU Political Science Department, Ms. Charibeth K. Cheng, DLSU Software Technology

Department, and Dr. Zelinna Cynthia D. Pablo, University of Melbourne; and discussants Dr. Francisco A. Magno, DLSU Political Science Department; and Mr. Nelson J. Celis, DLSU Management and Organization Department

Multidisciplinary Research Dissemination Conference. On September 4, 2015, a conference was held at Midas Hotel in Pasay City, with the principal objective of establishing and strengthening research collaboration among the faculty and PhD apprentices from the different colleges and disciplines of the University. Through parallel sessions, the findings of 36 completed URCO projects for AY 2014-2015 from the following colleges and units were presented: BAGCED, CCS, COB, COS, CLA, and GCOE, and academic service faculty proponents from the University Libraries, Office of Admissions and Scholarships, and Office of Counseling and Career Services.

Annual DLSU Research Congress. Consistent with the University's desire to create and provide venues that would stimulate among students, faculty and researchers the desire and commitment to engage and collaborate in the promotion of multidisciplinary researches, the annual DLSU Research Congress was conceived.

The 2014 DLSU Research Congress, which focused on the theme "Towards Rigorous, Relevant & Socially Responsive Lasallian Research" featured National Academy of Science & Technology (NAST) and former DOST Secretary, Dr. William G. Padolina; pioneer marine scientist and academician, Dr. Edgardo D. Gomez, and biomedical computing expert; Prof. Raouf Naguib, PhD, who shared the research directions and agenda that the country needs to address its pressing challenges.

Meanwhile, anchored on the theme "#ResearchforSustainableFuture," the 2015 DLSU Research Congress featured the 2009 Nobel Laureate for Chemistry, Professor Ada Yonath who delivered the keynote lecture. Professor Yonath, a global figure who helped revolutionize the field of structural biology, particularly the development and design of new antibiotics, focused on the topic, "Moving forward to maintain sustainability for the future of mankind." During the Congress, the University also showcased some of the most outstanding local scientists such as National Scientist Dr. Lourdes J. Cruz and Philippine Nuclear Research Institute Director Dr. Aluminada M. de la Rosa. The University Fellows, DLSU's premier group of faculty, also shared their works during the various lectures and forums

Questions - "Laymanizing" Research Findings. It was also during this period that *Questions*, an institutional publication of DLSU was launched. The publication presents research findings in a "laymanized" manner to enable the general public to better appreciate, support, and engage in the various research projects and creative endeavors of the University faculty. The research articles featured dealt with monitoring coral reefs, government-civil society partnership, Asian megacities, transformative learning, Philippine flora, literary craft lectures, computer-generated stories, clean air, biomedical tools, and food chemistry, solar car project, peri-urban areas on climate change, solid waste management, aerial project for disaster response, microalgae as power source, new technologies and e-participation, chemical industry roadmap, women in watersheds, Itawit dictionary, and role of storytelling.

Culminating Activity

The URCO traditionally caps the academic year with a Faculty Research Recognition Program in which faculty members with completed research projects and other relevant achievements are honored.

In September 2014, the following were recognized during the annual program: faculty with completed interdisciplinary internally- and externally-funded projects, as well as those with completed projects under the Challenge Grants program; faculty with research

programs launched through the URCO RPWs; faculty with externally-funded projects that have shown demonstrable national and global impact; faculty with publications in Thomson Reuters ISI- and Scopus-Indexed Journal Publications; nationally and internationally recognized researchers and projects; and the most cited works published for the year 2014 in the areas of science and technology, social sciences and business, and humanities and education.

The same program feted the following retired faculty researchers: Dr. Jesusa M. Marco who has worked with several national and international organizations and has accomplished over 40 lectures, publications, and major research reports in various areas including urban health, dengue control and prevention, HIV and AIDs control and prevention, at-risk youth and development, research-based governance and program and process evaluation; and Dr. Marjorie M. Evasco who has served on the boards of numerous prestigious award-giving bodies such as the National Book Development Board and the Carlos Palanca Memorial Awards for Literature and has received over 60 awards, honors and distinctions and has published or presented over 40 books, major works, scholarly works and prose.

During the annual Faculty Research Recognition Program held in October 2015, the University, through URCO expanded the awards given to faculty researchers beyond those with completed internally- and externally-funded research projects for a given period. Faculty with works published with local and international collaborators, as well as those who published with DLSU students in Scopus-ISI or CHED-listed journals were also recognized. Apart from these, the following were also honored during the Program: faculty who received external grants through the URCO's RPW; the most cited works in Scopus in the areas of science and technology, business and social science, and humanities and education; faculty with publication milestones such as those with accumulated Scopus papers, author/co-authored books, or who have produced/written/directed plays/films, as well as those who had served as editors-in-chief of ISI-Scopus-journals. The program also served as a venue for recognizing seasoned and recently retired researchers for their sterling contribution in enriching research in the University. They were: Dr. Ferdinand D. Dagmang, who received a grant for a Missio-Munich research on the evaluation of the PCP II Implementation in ten local parishes, undertook a sabbatical project for research writing of creative non-fiction about nuns, and was granted a special month-long field research on the Hanunuo Mangyan School in Mindoro, among other achievements; Dr. Susan M. Gallardo who was a recipient of various awards from the Japan Society for the Promotion of Science, the Swedish International Research and Development Agency, the International Bibliographical Center in London, the National Academy of Science and Technology, and the Department of Science and Technology, has published 42 articles in national and international refereed journals, has two patent applications, 65 completed researches and seven ongoing research programs and projects on chemical engineering, among her other achievements; and Dr. Alfredo C. Robles, Jr. who was a recipient of the Chevalier dans l'Ordre des Palmes Academiques, named 2013 Metrobank Outstanding Teacher, has published 3 books, 17 articles in refereed journals, 6 articles in collective works, three articles in Philippine journals, 22 research papers, 35 paper presentations, and five reviews and abstracts on international relations.

Prospects for AY 2015–2016 and Beyond

The Office of the VCRI and the URCO will intensify their campaign to boost research productivity and publications of faculty in Scopus-indexed journals and raise the quality and ensure the positive social impact of faculty research output. The Office of the VCRI will further explore ways of providing incentives and support for publications, conference registration, and travel subsidy for paper

presentations at the national and international levels.

Both offices will continue to work on expanding the University's research workforce via offering and strengthening the University's Postdoctoral Fellows Program, Ph.D. Apprenticeship Program, Research Fellows and Research Faculty Programs, and enhance the capability of the University's Research Administrative Staff. It has likewise taken the lead in the efforts to put in place research facilities that will encourage innovation and commercialization of research output of faculty and students through the Animo Labs and pertinent facilities in the Science and Technology Complex at the DLSU Laguna campus.

Through active participation in regional and global surveys for University rankings, the Office of the VCRI envisions DLSU to be ranked by the Times Higher Education World Reputation Rankings in 2020 as the top-ranked university in the Philippines, among the Top 50 Universities in Quacquarelli Symonds (QS) Asia, and among the top 250 Universities in the QS World University Rankings.

Finally, with the current ASEAN Economic Integration, research in DLSU is envisioned to touch on themes that consider the different aspects of the integration and assess their impact on the various sectors of Philippine society and the region.

LIST OF COMPLETED URCO-MANAGED INTERNALLY AND EXTERNALLY FUNDED PROJECTS

INTERNALLY FUNDED PROJECTS
AY 2013-2014

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
FACULTY RESEARCH PROGRAM	
Mr. Florenz Tugas *Accountancy*	Enhancing Competitiveness: A Study of the Effect of Selected Economic Variables on global Networked Readiness 01 F U 1TAY11-3TAY11
Mr. Raymund Habaradas *Management Organization Dept.*	The Learning Filipino Firm – Exploratory Case Studies 23 F U 2TAY08-2TAY09
Dr. Rachel Quero *Management Organization Dept.*	Aligning Human Resource Management Policies and Practices with Disaster Preparedness 36 F U 3TAY11-2TAY12
Ms. Ethel Ong *Software Technology*	Utilizing Semantic Knowledge Resources in Generating Children's Stories 39 F U 3TAY11-3TAY12
Dr. Merlin Teodosia Suarez *Software Technology*	Developing an Affect-based Music Recommendation System 03 F U 1TAY12-1TAY13
Dr. Rachel Edita Roxas *Software Technology*	Developing New Philippine Language Modeling, Analysis, and NLP Processing Capabilities: Towards a Disaster Risk Management e-Participation Platform 05 F 1TAY13-1TAY14
Ms. Charibeth Cheng *Software Technology*	Designing New e-Participation Tools to Empower Communities in Disaster Risk Reduction and Management 04 F 1TAY13-1TAY14
Mr. Danny Cheng *Information Technology*	An Architecture for Integrating a Web-based IDE and a Project Management System [Original title: A Framework for Integrating a Web-based IDE and a Project Management System] 20 F U 2TAY12-1TAY13
Mr. Gregory Cu *Software Technology*	An Application Programming Interface for the Ambient Intelligent System of the Empathic Space 19 F U 2TAY11-2TAY12
Ms. Nathalie Rose Lim-Cheng *Software Technology*	Information Extraction of Transaction Information from Business News Articles 02 F U 1TAY11-1TAY12
Ms. Kiran Budhrani *Information Technology*	The Next Iron M.A.N.:s Multimedia Artist of the Next Generation Student Laboratory Manual INMEDIA (Instructional Medium) Course [Original title: Materials Development for the INANIME (Interactive Presentations and Animation) Elective] 39 M U 2TAY06-3TAY06

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
Dr. Josephine Mirador *DEAL*	Investigating Criticality in Written Assignments by DLSU Applied Linguistics/TESOL Graduate Students 07 F U 1TAY13-2TAY13
Dr. Alicia Estrellado *CEPD*	Ending an Intimate Partner Violence: Turning Points and Coping Resources 03 F U 1TAY11-1TAY12
Dr. Ma. Joahna M. Estacio *DEAL*	Filipino Bilingual Readers' Perspective-taking: A Study on Sarcasm Detection [Original title: An Investigation of the Illusory Transparency of Human Intention among L2 Readers] O6 F U 1TAY10-2TAY11
Dr. Allan Benedict Bernardo *CEPD*	Do Social Beliefs Predict Filipino Students' Hope Cognition? 42 F U 3TAY11-3TAY12
Dr. Marianne Jennifer Gaerlan *DEAL*	Learning in a L2: An Analysis of Less Ssuccessful Filipino ESL Learners' Experiences through Consensual Qualitative Research 16 F U 2TAY09-1TAY10
Dr. Leah Gustilo *DEAL*	The Analysis of Cognitive Processes of Freshman College Students in Writing Essay 33 F U 2TAY11-2TAY12
Dr. Maria Cequena *DEAL*	Web-mediated Instruction: Effects of Students' Reading and Writing Performance 43 F U 3TAY11-3TAY12
Dr. Susan Roces Dr. Florinda Bacani Dr. Raymond Tan *Chemical Engineering*	Transesterification of *Jatropha Curcas* Oil and Coconut Oil by Microwave Irradiation 44 F U 3TAY09-3TAY10
Mr. Ronaldo Polancos *Industrial Engineering*	Assessing and Redesigning an ERP System-Trade and Logistics 09 F U 1TAY12-1TAY13
Dr. Elmer Dadios Mr. Melvin Cabatuan *MEM/ECE*	Computational Intelligence-based Algorithm for Breast Self-examination Guidance System 43 F U 3TAY12-3TAY13
Engr. Aristotle Ubando *Mechanical Engineering*	Development of a Model in Optimizing a Biomass-based Polygeneration Supply Chain using Fuzzy Multi-objective with Triple Footprint Constraints 37 F U 3TAY12-2TAY13
Mr. Richard Li *Industrial Engineering*	The Impact of Service Failure Severity and Complaining Behavior on Service Recovery Evaluations and Post-Recovery Relationships 48 F U 3TAY11-3TAY12
Mr. Ronaldo Polancos *Industrial Engineering*	A Usability Study of a Manufacturing Module of an Enterprise Resource Planning (ERP) System 05 F U 1TAY11-1TAY12
Dr. Anthony Shun Fung Chiu *Industrial Engineering*	Evaluation of New Product Development in a Firm's Knowledge Management Capability: A Novel Approach 32 F U 3TAY09-3TAY10
Mr. Rumel Atienza *Industrial Engineering*	Food Service Management 08 M U 1TAY10-1TAY12

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
Dr. Luis Razon *Chemical Engineering*	Life Cycle Energy and Environment Impacts Associated with the Production and Use of Ammonium Sulfate from Photosynthetic Nitrogen-fixing Cyanobacteria 45 F U 3TAY11-3TAY12
Dr. Andres Winston Oreta Ms. Cheryl Lyne Roxas *Civil Engineering*	Outcomes-based Assessment of Engineering Mechanics (STATICS) Using Direct and Indirect Methods 47 F U 3TAY11-3TAY12
Dr. Julius Maridable *Chemical Engineering*	Preparation of Aluminum-based Coating Material for the Formation of an Inorganic Membrane Composite 10 RP (URCO/CRF) 1TSY2000-2001
Prof. Katrina Legarda (Ma. Carolina Legarda) Prof. Margarita Deriquito-Mawis *College of Law*	Critical Analysis of the Law and Jurisprudence on Persons and Family Relations 54 F U 3TAY11-3TAY12
Atty. Jocelyn Cruz *Commercial Law*	Seminar on Study Techniques Materials Development, Modules 1 & 2 Module 1: Getting Ready for Law School Module 2: Keeping Up with the Demands of Your Life and Law School Education 34 M U 3TAY10-1TAY11
Dr. Francisco Magno *Political Science*	E-governance and Social Inclusion in the Philippines 44 F U 3TAY10-1TAY11
Dr. Ferdinand Dagmang *TRED*	Evaluation of the PCP II Implementation in One Selected Local Parish – The Parish of Our Lady of the Abandoned, Mandaluyong [Original title: Evaluation of the Process and Impact of PCP II Implementation in One Selected Local Parish] 41 F U 3TAY10-3TAY12
Dr. Charmaine Misalucha *International Studies*	A Multiciplicity of Regionalism: Discourse of Regionalism in Southeast Asia [Original title: A Multiplicity of Regionalism] 42 F U 3TAY10-3TAY11
Dr. Antonio Contreras *Political Science*	Polity Beyond the State: The Politics of Ordinary and Everyday Lives [Original title: Political Spaces Beyond the State: A Postmodern Inquiry into the Politics of Everyday and Ordinary Lives] 11 F U 1TAY02-1TAY03
Dr. Ramon Felipe Sarmiento *Behavioral Sciences*	The Anthropological Imagination as Embodied in the Independent Cinema of the Philippines 09 F U 1TAY11-3TAY11
Dr. Rene Escalante *History*	Re-examining the Root Cause of the Calamba Unrest of 1891 [Original tile: Rizal and the Calamba Agrarian Unrest of 1891] 10 F U 1TAY11-1TAY12
Dr. Noel Alfonso *Biology*	Initial Survey of the Reproductive Biology of “Kanduli”, *Arius manillensis*, of Laguna Bay 19 F U 1TAY10-1TAY11

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
Dr. Esperanza Maribel Agoo *Biology*	Building a DNA Catalogue of Philippine Threatened Plants: Orchids 45 F U 3TAY07-3TAY08
Dr. Consolacion Ragasa *Chemistry*	Studies on the Chemical Constituents and Bioactivities of *Samanea saman* and *Artocarpus altilis* 27 F U/S 2TAY12-2TAY13
Dr. Wilfredo Chung *Chemistry*	Detailed Quantum Dynamics of the Ultrafast Relaxation of Photoexcited Adenine-thymine and Guanine-cytosine DNA Base Pairs 15 F U/C 1TAY12-1TAY13
Dr. Glenn Alea Ms. Faith Marie Lagua *Chemistry*	Synthesis and Characterization of Pyrazinamide Analogs of Aspirin and Salicylic Acid 33 F U/S 2TAY10-2TAY11
Dr. Wilfredo Roehl Licuanan *Biology*	Integrated Coastal Enhancement: Coastal Research, Evaluation and Adaptive Management (ICE CREAM) for Climate Change – Project 3: Monitoring and Impact Research on Resilience of Reefs 37 F U 3TAY09-3TAY10
Dr. Shirley Tiong-Palisoc *Physics*	Synthesis, Morphological Characterization, and Investigation of the Transport Properties of Redox-active Nafion Thin Films for Sensor Applications 16 F U/S 1TAY12-1TAY13
Mr. John Vincent Morales Dr. Arlene Pascasio *Mathematics*	The Doob Graphs and the Tetrahedron Algebra 46 F U 3TAY10-3TAY11
Dr. Aida Velasco *Business Management*	An Axiomatic Paradigm of Supply Chain Management for Filipino SMEs [Original title: Workstation Design Guidelines for Filipino Women Workers in the Microelectronics Industry] 17 (UERF) 1T SY 2000-2001
Dr. Susan Gallardo *Chemical Engineering*	Biodegradability and Photodegradability of Common Persistent Organic Pollutants in the Philippines: Focus on Chlordane 47 (UERF) 1T SY 2004-2005
GENERAL EDUCATION MODULES FOR TRANSFORMATIVE LEARNING	
Ms. Virgilia Calabio *Physical Education*	General Education Module for FWDANCE (Ballroom Dance) 29 GE C 3TAY05-3TAY05
Ms. Virgilia Calabio Mr. Samson Bernales *Physical Education*	Teaching Modules for Teachers (General Education Curriculum) FWTEAMS (Volleyball) 23 GE C 3TAY05-3TAY05
ST. MIGUEL FEBRES DE CORDERO RESEARCH AWARDEE WITH URCO-FUNDED PROJECT	
Dr. Lakangiting Garcia *Filipino*	Minimalistang Pagsasadula ng *El Filibusterismo* ni Rizal Gamit Sina Becket at Grotowski 28 B U 2TAY10-2TAY11
RESEARCH FACULTY GRANT	
Dr. Rene Escalante *History*	Preachers-Tillers in Colonial Philippines: A History of the Agrarian Ventures of the Augustinian Recollects in Cavite, 1590-1910 [Original title: A History of a Recollect Hacienda in Cavite] 54 RFG 1TAY06-1TAY07

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
SABBATICAL LEAVE PROJECT	
Atty. Emmanuel Sales *Commercial Law*	A Judicial Theory of Economics 34 S U 2TAY05-2TAY06
Dr. Sherwin Ona *Information Technology*	Creation of a Systems Development Model for Knowledge Management Applications in Community Resource-based Appraisal 65 S U/C 3TAY06-3TAY07
Mr. Clement Ong *Computer Technology*	Development, Characterization and Evaluation of a Multi-way, Direct-driven DSP Enhanced Loudspeaker System 17 S U 2TAY07-2TAY08
Engr. Jason Maximino Ongpeng *Civil Engineering*	Non-destructive Testing Using Ultra-sonic Waves for Reinforced Concete 40 S U 3TAY10-3TAY11
Dr. Eric Punzalan *Chemistry*	Investigation of the Effect of Alkali Metal Alkoxides on the Reactivity of Calcium Carbide 07 RP-S (URCO) 3T SY 2002-03
THESIS & DISSERTATION GRANT	
Mr. Leif Romeritch Syliongka *Software Technology*	Using Unsupervised Methods and Manual Analysis: A Framework for Discovering Themes from Social Media Posts [Original title: Using Cultural Semantics to Extract Information from Web Documents for Expanding Art-based Ontologies] 41 D U 3TAY11-2TAY12
Ms. Joyce Ferro Orillosa *ELMD*	Towards a Model of Managing Special Education Programs in the Philippine Setting 08 D U 1TAY12-1TAY13
Mr. Ramilito Correa *Filipino*	Appropriasyon ng Japanese Animé sa Lipunang Filipino 10 D U/C 1TAY03-2TAY03
Mr. Adrianne John Galang *Psychology*	Latent Inhibition and Risk Aversion as Predictors of Creativity: A First Test of the Prosocial-Psychopath Model 13 D U 1TAY12-3TAY12
NEW PH.D. GRANT	
Dr. Eden Regala-Flores *DEAL*	Self-concept and Self-efficacy Beliefs as Predictors of Writing Performance of DLSU Students 48 N 3TAY10-1TAY12
Dr. Cheryll Ruth Soriano *Communication*	Minorities and Social Media Mobilizations: Investigating “Acts of Citizenship” 41 N 3TAY12-3TAY13
Dr. Rhoderick Nuncio *Filipino*	Pagtatala ng Abstrak ng Piling Jornal at Pagbuo ng Gabay sa Pananaliksik sa Larangan ng Multidisiplinaryo ng Araling Filipino 34 N 2TAY06-3TAY07
Dr. Michelle Natividad *Physics*	A DFT-based Study of Atomic Hydrogen Adsorption and Absorption on/into Graphite via the Armchair Edge Effect: Effects of Preadsorbed H Atoms 56 N 3TAY11-3TAY12

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
Dr. Al Rey Villagracia *Physics*	Density Functional Theory Investigation on Iron-doped Dimer Pyrrole Using Cluster Method and Periodic Method 16 N 1TAY11-2TAY12
Dr. Richard Hartmann *Physics*	Terahertz Absorption and Amission in Quasi-metallic Carbon Nanotubes 17 N 1TAY12-1TAY13
Dr. Jade Dungao Trono *Physics*	Monte Carlo Simulation of Phantom in Combination with Different Concentrations of Gold for Use in Medical Imaging 15 N 1TAY11-2TAY12
INTERDISCIPLINARY RESEARCH	
Dr. Rachel EditaRoxas, *Software Techonology* *Project Coordinator* Dr. Zelinna Pablo, *Information Technology* Ms. Charibeth Cheng, *Computer Technology* Dr. Divina Gracia Roldan, *Political Science* *Project Team Members*	A Comparison of Manual and NLP-supported Discourse Analysis of Twitter-based Comments on the May 2013 Elections 11 IR U 3TAY12-2TAY13
Dr. Joel Ilao, *Computer Technology* *Project Coordinator* Dr. Rachel EdithaRoxas, *Software Techonology* Dr. Raquel Sison-Buban, *Filipino* *Project Team Members*	Parallel Language Resources 09 IR U 2TAY12-2TAY13
Ms. Ethel Ong, *Software Technology* *Project Coordinator* Mr. Clement Ong, *Computer Technology* Mr. Ron Resurreccion, *Psychology* *Project Team Members*	Voice Recording for Children's Stories 08 IR S 3TAY10-3TAY11
Dr. Dennis Pulido, *DEAL* *Project Coordinator* Dr. Marites Tiongco, *SOE* Dr. Hazel Biana, *Philosophy* *Project Team Members*	Justice in a Cup: A Linguistic Phenomenological Study of Fair Trade Coffee Farming Experience in the Cordilleras 08 IR U 2TAY12-1TAY13
Mr. Richard Li, *Industrial Engineering* Mr. Solomon See, *Software Techonology* Ms. Jazmin Chong Tangsoc, *Industrial Engineering*	Development of DEA-based Performance Measurement Mathematical Model and Software Application System for Handling Undesirable Output, Exogenous Data, Missing Data, and Resource Reallocation Decisions 01 IR S 1TAY10-2TAY11
Dr. Susan Gallardo, *Chemical Engineering* *Project Coordinator* Engr. Ronaldo Gallardo, *Chemical Engineering* Dr. Jonathan Dungca, *Chemical Engineering* Dr. Eppie Clark, *Industrial Engineering* *Project Team Members*	Sustainability Issue Due to Coal Ash from Coal-fired Power Plants in the Philippines: Phase 2 – Sustainable Solutions for an Industry Partner 09 IR U 3TAY11-3TAY12
Dr. Gil Nonato Santos, *Physics* Ms. Grethel Mende, *Physics* Dr. Auxencia Limjap, *Science Education*	Evaluating the Implementation and Effectiveness of GIS-based Environment Laboratory Activities in GE Classes 06 IR S 2TAY10-3TAY11

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
RESEARCH PROGRAM WORKSHOPS	
Dr. Aida Velasco *Chair, DSI* Dr. Gerardo Largoza, *Economics* Dr. Junette Perez, *Financial Management* *Co-Chairs*	Growth and Sustainability of SMEs 01 RPW AY2012-2013
Dr. Arlene Inocencio, *Economics* Dr. Anna Bella Siriban-Manalang *Industrial Engineering* Dr. Marites Tiongco, *Economics* Dr. Carmen Lagman, *Biology*	Moving Towards Sustainable Development and a Greener Philippine Economy 02 RPW AY2013-2014
Ms. Mitzie Irene Conchada, *Economics* Dr. Gerardo Largoza, *Economics* Dr. Marites Tiongco, *Economics* Mr. Paolo Bautista, *Mathematics* Ms. Ella Oplas, *Political Science*	Experimental and Non-experimental Approaches in Economics for Impact Evaluation Studies 01 RPW AY2013-2014
Dr. Sherwin Ona, *Information Technology* *Chair* Dr. Jesusa Marco, *Behavioral Sciences* Ms. Nathalie Rose Lim-Cheng *Software Technology* Mr. Gian Kristian Fontanilla, *Software Technology* Mr. Ralph Vincent Regalado, *Software Technology* *Co-Chairs*	Uncovering Tipping Points in Health Management of Local Communities 03 RPW AY2012-2013
Ms. Jocelynn Cu, *Computer Technology* Ms. Ethel Ong, *Software Technology* Dr. Merlin Suarez, *Software Technology* Dr. Rochelle Irene Lucas, *DEAL*	Developing an Empathic, Culture-based Embodied Conversational Tutor Agents for Teaching English as a Second Language to Using Philippine Culture and Heritage as a Content 03 RPW AY2011-2012
Dr. Jessie Barrot, *DEAL* Dr. Carlo Magno, *CEPD* Dr. Shirley Dita, *DEAL* Ms. Ethel Ong, *Software Technology*	Towards 21st Century Literacy 04 RPW AY2013-2014
Dr. Shirley Dita, *DEAL* Dr. Ariane Borlongan, *DEAL* Dr. Carlo Magno, *CEDP*	Language and Education 05 RPW AY2012-2013
Dr. Roseann Tan-Mansukhani, *Psychology* Ms. Myla Arcinas, *Behavioral Sciences* Ms. Carla Pacis, *Literature*	Filipino Youth at Risk: Issues and Problems 05 RPW AY2013-2014
Dr. Michael Angelo Promentilla *Chemical Engineering* *Chair* Dr. Susan Gallardo, *Civil Engineering* Dr. Jonathan Dungca, *Civil Engineering* *Co-Chairs*	Developing Sustainable Solutions to Environmental Problems Associated with Coal-fired Power Plant in ASEAN Region 03 RPW AY2013-2014

EXTERNALLY FUNDED PROJECTS
AY 2013-2014

PROJECT DIRECTOR/ASSOCIATES	PROJECT TITLE/NO.	FUNDING AGENCY
DLSU-ANGELO KUNG INSTITUTE FOR ECONOMIC AND BUSINESS STUDIES (DLSU-AKI)		
Mr. Marvin Raymond Castell Dr. Tereso Tullao, Jr., Dr. Lawrence Dacuycuy Mr. Angelo Taningco	The International Discussions on the Credit Rating Agencies and Enhancing Infrastructure to Strengthen the Regional Credit Rating Capacity in the ASEAN +3 Region SOE AKI 11 I 1TA12 - 3TA12	ASEAN
Dr. Marites Tiongco	Philippines Alternative Learning System Survey SOE AKI 15 I 1TA13-3TA13	World Bank
Dr. Tereso Tullao, Jr.	Education in Human Capital Development to Strengthen Research and Development SOE AKI 1 I 3TA12-2TA13	Economic Research Institute for ASEAN and East Asia
Dr. Tereso Tullao, Jr. Ms. Ma. Concepcion Latoja Mr. Dickson Lim Ms. Paulynne Castillo Ms. Madeleine Balane Ms. Rhory Fernandez Ms. Gina Ledda Dr. Roberto Raymundo Dr. Roderick Bugador Mr. Christopher James Cabuay Ms. Denise Serrano	Development of Industry Career Guides 2nd batch SOE AKI 01 L 1TAY12 - 2TAY12	Department of Labor and Employment (DOLE)
Dr. Tereso Tullao, Jr. Mr. Christopher James Cabuay	Movement of Natural Persons Between the Philippines and Taiwan SOE AKI 21 L 2TA12-3TA12	Philippine Institute of Development Studies (PIDS)
ADVANCED RESEARCH INSTITUTE FOR INFORMATICS, COMPUTING AND NETWORKING (ADRIC)		
Ms. Jocelynn Cu	Modeling Spontaneous Blended Emotions Using Dimensional Labels	ERDT
Mr. Solomon See	Using Self-organized Maps and Regression to Solve the Acoustic-to-Articulatory Inversion as Input to a Visual Articulatory Feedback System Movement Modeling Using Mobile Phone Sensors Experience Curve Modeling on Local TV Shows and Films	
Mr. Solomon Se	Plutopia: Game for Social Accountability CCS AdRIC 9 L 3TA09-3TA09	Affiliated Network for Social Accountability in East Asia and the Pacific (ANSA-EAP)
LASALLIAN INSTITUTE FOR DEVELOPMENT AND EDUCATIONAL RESEARCH (LIDER)		
Dr. Roberto Borromeo Dr. Maricar Prudente	Graduate Tracer Study 3 CED LIDER 12 L 2TA11-1TA12	Commission on Higher Education (CHED)

PROJECT DIRECTOR/ASSOCIATES	PROJECT TITLE/NO.	FUNDING AGENCY
CENTER FOR ENGINEERING AND SUSTAINABLE DEVELOPMENT RESEARCH (CESDR)		
Dr. Susan A. Roces Dr. Michael Angelo Promentilla Dr. Nathaniel Dugos	Emissions and Performance of Diesel Engine using Blends of Waste Cooking Oil Methyl Ester (Biodiesel) and Diesel GCOE CESDR 20 I 2TA11-1TA13	AUN/SEED-NET JICA
Dr. Susan A, Roces Dr. Nathaniel Dugos	Evaluation of Metal-based Oxygen Carrier in Chemical Looping Combustion of Philippine Coal Using a Thermogravimetric Analyzer. GCOE CESDR 25 I 2TA11-1TA13	
Ms. Marylou M. Uy Dr. Josephine Borja	Extraction of Natural Products from Plants GCOE CESDR 31 I 2TA11-1TA13	
Dr. Susan Gallardo Dr. Leonila Abella Dr. Josephine Borja Dr. Michael Angelo Promentilla	National Inventory for New Persistent Organic Pollutants (POPs) GCOE CESDR 18 I 1TA12-1TA13	UNIDO
Dr. Luis Razon	Assessment of Alternative Processes for the Production of Ammonium Compounds from Diazotrophic Cyanobacteria GCOE URCO 6 L 2TAY12 - 1TAY13	CHED/Phernet
Dr. Raymond Tan	Development of Process Systems Engineering (PSE) Approaches to the Design and Operation of Low-Carbon Energy Systems GCOE URCO 6 L 2TAY12 - 1TAY13	
Dr. Raymond Tan Dr. Kathleen Aviso Dr. Michael Promentilla	Development of Inoperability Input-Output Model (IIM) for the Philippines GCOE URCO 6 L 2TAY12 - 1TAY13	
Dr. Elmer Dadios	Development of Breast Cancer Self-examination (BSE) Multimedia System for the Philippines GCOE URCO 6 L 2TAY12 - 1TAY13	
Dr. Joseph Auresenia	Power Output Optimization of the Performance of Dye-sensitized Solar Cell (DSSC) by Iron-Nickel Doping Ratio, Titanium Dioxide Photoanode Thickness and Carbon Nanotube Counter Electrode Concentration using Response Surface Methodology (RSM) GCOE CESDR 87 L 2TA12-3TA13	ERDT
Dr. Jonathan Dungca	Strength and Compressibility of Coal Ash as Embankment Material for Land Reclamation GCOE CESDR 38 L 3TAY11-2TAY13	
Dr. Andres Winston Oreta	Design of a Computer-aided Earthquake Risk Management Tool for Safe School Communities GCOE CESDR 03 L 3TA12-2TA13	
Dr. Alexis Fillone	Integrated Land and Water Transport Operations in Jordan Wharf, Guimaras GCOE CESDR 40 L 3TAY11-2TAY13	

PROJECT DIRECTOR/ASSOCIATES	PROJECT TITLE/NO.	FUNDING AGENCY
Mr. Ronaldo Gallardo	An Investigation on the Influence of Coal Ash Replacement and Seawater Mixing and Curing on Bamboo-reinforced Concrete GCOE CESDR 01 L 3TA11-2TA13	ERDT
Mr. Isidro Antonio Marfori	Investigation of the Effects of Blade Profile Geometry on a Hinged Blade Cross Axis Turbine GCOE CESDR 45 L 1TAY11-3TAT12	
Dr. Alexis Fillone	Mode Choice Analysis of Interisland Passenger Travel from Iloilo to Negros Occidental GCOE CESDR 47 L 3TAY11-2TAY13 Choice Analysis of Tourist Spots: The Case of Guimaras Province GCOE CESDR 48 L 3TAY11-2TAY13	
Mr. Roderick Yap	Design and Characterization of Low Voltage, Low Frequency Clock Generator with Low Process Sensitivity Using 0.25 MM Library GCOE CESDR 04 L 3TA11-2TA13	
Ms. Jazmin Tangsoc	Service Quality Assessment in Health Care Service for Hospitals GCOE CESDR 51 L 3TAY11-2TAY13	
Mr. Dennis Benghui	Modeling Mobile Phone User Preferences on Incentives and Convenience of Mobile Phone Take-back Program in the Philippines: A Choice Experiment Approach GCOE CESDR 52 L 1TAY12-2TAY13	
Dr. Anthony Shun Fung Chiu	Energy and Materials Flows of Megacities	Enel Foundation
	Ecolabeling and Sustainable Public Procurement in the Global Environment Outlook: Small Island Developing States (GEO SIDS) Resource Management Indicator for Green Asia Sustainable Product Innovation (SPIN) for Vietnam, Laos, and Cambodia.	UNEP
CENTER FOR NATURAL SCIENCES AND ENVIRONMENTAL RESEARCH (CENSER)		
Dr. Gil Nonato Santos	Fabrication and Characterization of Tin Oxide-Silver Composite Nanomaterials Synthesized by Horizontal Vapor Phase Growth (HVPG) Technique for Heat Absorbent and Antimicrobial Applications COS CENSER 04 L 1TAY12 - 1TAY13	DOST-PCIEERD

PROJECT DIRECTOR/ASSOCIATES	PROJECT TITLE/NO.	FUNDING AGENCY
Dr. Wilfredo Licuanan	Software-assisted Vulnerability Assessment (SAVANT) Tools for Climate Change in Coastal Communities GCOE URCO 6 L 2TAY12 - 1TAY13	CHED/PHERNet
Dr. Nelson Arboleda	An Ab initio Investigation of Extracting Water from Nannochloropsis sp.: A First Step in the Design, Fabrication, and Testing of Novel Catalytic Materials in Microalgae Drying for Biofuel Production GCOE URCO 6 L 2TAY12 - 1TAY13	
JESSE M. ROBREDO INSTITUTE OF GOVERNANCE (JRIG)		
Dr. Francisco Magno	Conduct of Trainings on Community Participation in Procurement in Mulanay, Quezon CLA JMRIG 11 I 1TA13	World Bank
Dr. Francisco Magno Ms. Armina Untalan	Policy Development and Knowledge Hub for Decentralized Education CLA JMRIG 06 L 1TA13-2TA14	Australia Agency for International Development
Dr. Francisco Magno	Aid Choices in Decentralized Context: Working with Partner Systems to Improve Service Delivery CLA JMRIG 04 I 2TA12-1TA13	Institute for Sustainable Futures of the University of Technology Sydney
	Local Government Capacity in Climate Change Adaptation and Disaster Risk Management GCOE URCO L 2TAY12 - 1TAY13	CHED/PHERNet
	E-Governance Services for Overseas Filipino Workers CLA JMRIG 17 L 3TA12-1TA13	NRCP
Dr. Francisco A. Magno Ms. Cristina Rodriguez Mr. Marlon Era Mr. Gladstone Cuarteros Mr. Ian Jayson Hecita Mr. Redentor Recio	Rapid Assessment of the PCF Program for LGUs CLA LSIG 69 I 2TAY11 - 3TAY11	Caucus of Development NGO Networks (CODE-NGO)
Dr. Francisco Magno	Civil Society and Local Budget Work CLA LSIG 05 I 1TAY12 - 3TAY12	Center for Budget and Policy Priorities CBPP
	Institutionalizing Civil Society Monitoring and Assessment of Public Service Delivery to the Poor CLA LSIG 71 I 2TAY10 - 3TAY12	World Bank
SOCIAL DEVELOPMENT RESEARCH CENTER (SDRC)		
Dr. Roberto Javier, Jr. Dr. Melvin Jabar Dr. Feorillo Demeterio III Dr. Raymund Habaradas Dr. Ron Resurreccion”	From the Margins to the Mainstream of Society: Transforming the Lives of Workers with Exceptionality, their Co-workers, Business, Corporate Practices, Policies, and the Workplace CLA SDRC 16 1TA13-1TA14	UNILAB Foundation, Inc.

LIST OF COMPLETED URCO-MANAGED INTERNALLY AND EXTERNALLY FUNDED PROJECTS

INTERNALLY FUNDED PROJECTS AY 2014-2015

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
FACULTY RESEARCH PROGRAM	
Dr. Lawrence Dacuycuy *Economics*	A Semi-parametric Analysis of Female Labor Force Participation in the Philippines: Models, Test Methodologies, and Inference 01 F U 1TAY12-3TAY12
Atty. Emily Sanchez-Salcedo *Commercial Law*	Primer on Philippine Partnership Law 22 F U 2TAY08-2TAY09
Mr. Macario Cordel II Dr. Joel Ilao *Computer Technology*	An Intelligent Electronic Stethoscope in the Identification/Auscultation of Pulmonary Pathologies 37 F U 3TAY11-3TAY12
Ms. Ma. Victoria Pineda *Information Technology*	Design and Evaluation of Socialized and Systematized Methods of Early Warning in Urban Communities through the Use of ICT 21 F U 2TAY12-2TAY13
Mr. Roger Luis Uy *Computer Technology*	Beyond Multi-core: A Survey of Architectural Innovations 22 F U 2TAY12-1TAY13
Dr. Janet Mariano Ms. Melanie Juliano *Physical Education*	The DLSU Fitwell Instructional Manual 06 M U 1TAY12-3TAY12
Mr. Jasper Vincent Alontaga *ELMD*	Internet Shop Users: Computer Practices and Its Relationship to E-learning Readiness 05 F U 1TAY12-1TAY13
Dr. Carlo Magno *CEPD*	I Study Well Because I am Responsible: Inquiry into Responsibility for Learning and Academic Self-Regulated Learning 22 F U 2TAY10-1TAY11
Ms. Alma Maria Jennifer Gutierrez *Industrial Engineering*	Affective Evaluation of Eco-based Consumer Products 32 F U 2TAY12-2TAY13
Mr. Dennis Beng Hui *Industrial Engineering*	Comparative Benchmarking Analysis Among Fine Jewelry and Costume Jewelry Companies in the Philippines Using Data Envelopment Analysis (DEA) 17 F U 1TAY10-3TAY10
Dr. Eppie Clark *Industrial Engineering*	Materials Development for Retail Management for Industrial Engineering 36 M U 3TAY12-2TAY13
Mr. Bryan Gobaco *Industrial Engineering*	Understanding the Impact of the Interplay of Upstream Pricing and Differential Inventory Holding Cost with Downstream Demand Visibility on the Performance of a Two-eschelon Supply Chain 26 F U 2TAY12-2TAY13

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
Dr. Pag-asa Gaspillo *Chemical Engineering*	Electrocoagulation of Quick Service Restaurant Wastewater in an Upflow Semi-batch Reactor [Original title: Treatment of Simulated Quick Service Restaurant Wastewater by Electro-coagulation Using Aluminum-Iron Electrode Pair] 08 F U/S 1TAY13-1TAY14
Dr. Alvin Chua Mr. Conrad Allan Jay Pantua *Mechanical Engineering*	Simulation of a Flotation System for Cars 27 F U 1TAY14-3TAY14
Dr. Renan Ma. Tanhueco *Civil Engineering*	Quantifying the Physical and Social Aspects of Disaster Vulnerability: Flood Risk Assessment in Dagupan City 05 F U 1TAY04-1TAY05
Ms. May Ann Garo-Santiago Ms. Marie Rose Henson *Psychology*	Examining Poverty Among Filipino Youth Using Pathways-to-Development and Intervention Approaches to Risk and Positive Outcomes 30 F U 2TAY11-2TAY12
Dr. Feorillo Demeterio III *Departamento ng Filipino*	The Socio-Political Discourses of the Catholic Bishops' Conference of the Philippines: An Analysis from the Perspective of Young's Theories of Structural Justice and Collective Responsibility 12 F U 1TAY13-1TAY14
Dr. Melissa Lopez Reyes Ms. Katrina Fernando *Psychology*	Validation and Norming Procedures and Manual Construction for the Multi-context Assessment Battery of Youth Development 29 F U 2TAY11-2TAY12
Dr. Josefina Mangahis *Departamento ng Filipino* Ms. Ethel Ong *Software Technology*	Building Databank of Philippine Language (Tagalog) 08 F U 1TAY08-3TAY08
Dr. Rene Escalante *History*	Pacifying and Sanitizing the Philippines: An Overview of American Public Health Policy on Leprosy, 1899-1941 29 F 1TAY14-3TAY14
Dr. Alfredo Robles *International Studies*	Trade in Financial Services in ASEAN-EU Relations: The Challenge of Coherence 11 F U 1TAY12-1TAY13
Dr. Francisco Magno *Political Science*	Local Government Capacity and Cooperation in Climate Change Adaptation and Disaster Risk Management 12 F U 1TAY14-3TAY14
Dr. Marissa Noel *Chemistry*	Effects of Processing on Glucosinolates and Their Breakdown Products in a Selected Local Cruciferous Vegetable 38 F U/S 3TAY09-3TAY10
Dr. Leonor Aquino-Ruivivar *Mathematics*	The Intersection Graph of Half-planes 63 F U 3TAY06-3TAY07
Dr. Ma. Luisa Enriquez *Physics*	Integrated Earth Science Laboratory Manual 2nd Edition [Original title: Integrated Earth Science, Manual of Laboratory Exercises] 39 M U/C 2TAY01-ITAY02

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
Ms. Maria Carla Manzano *Physics*	Conducting-Polymer-based Solar Cell 52 F U/S 3TAY11-3TAY12
Dr. Maria Carmen Tan *Chemistry*	The Cytotoxicity Potential of the Chemical Constituents of Raphanussativus 53 F U/S 3TAY11-3TAY12 [Original title: Investigation of Two Possible Chemotherapeutic Chemical Patways for Some Glucosinolate-rich Vegetables (Moringaoleifera, Basellarubra Linn., Raphanussativus) by Analysis of Anti-Fenton Activity and 2/16 Hydroxyesterone]
Mr. Joel Chavez Dr. Jose Santos Carandang VI *Biology*	Morphometric Characterization and Taxonomic Assessment of the Zoological Specimen Collection of the Biology Department, De La Salle University 31 F U/C/S 2 11
Gladys Cherisse Completo *Chemistry*	Assisted Direct 2'-Fluorination of Pyrimidine-based Nucleosides 14 F U/S 1TAY13-1TAY14
Mr. Glenn Oyong *Biology, ASF*	Laboratory Manual of Basic Protocols in Cell and Molecular Biology 47 M U 3TAY07-2TAY08
Dr. Drexel Camacho *Chemistry*	Carrageenan-based Polymer Electrolyte System for Dye-sensitized Solar Cell 50 F U 3TAY11-3TAY12
NEW PH.D. GRANT	
Dr. Emilina Sarreal *Decision Sciences & Innovation*	The Entrepreneurial Decision Process: Understanding the Entrepreneurial Career Stages Among Young Men and Women 14 N 1TAY07-3TAY08
Dr. Mary Ann Adajar *Civil Engineering*	Predicting Hydrocompression Settlement of Industrial Wastes with Plasticity When Used as Embankment or Fill Materials 20 N 3TAY13-2TAY14
Dr. Genevieve Asenjo *Literature*	Kamatayun sa Isla Boracay 17 N 1TAY08-1TAY09
Dr. Ma. Caridad Tarroja *Psychology*	The Experience of Birth Mothers Who Relinquished Their Children for Adoption 51 N 3TAY07-1TAY09
Dr. Lars Raymund Ubaldo *History*	Ang Tradisyon ng Pagpapanday sa Pangunahing Etnolingwistikong Grupo sa Cordillera 14 N 1TAY10-2TAY11
Dr. Roseann Tan-Mansukhani *Psychology*	Wise Person in the Community: Their Actions, Social Interactions, and Roles 49 N 3TAY10-1TAY12
Dr. Rowell Madula *Filipino*	Mga Istorya sa Kinabuhi sa mga Rebolusonaryong Bayot sa Nasudnong Demokratikong Kalihukan sa Southern Mindanao Region 1 Mga Kwentong Buhay ng mga Rebolusyonaryong Bakla ng Southern Mindanao Region sa Pambansa-Demokratikong Pakikibaka 30 N 2TAY12-2TAY13

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
Dr. Derrick Ethelbhert Yu *Chemistry*	Synthesis and Characterization of Ruthenium Phtalocyanine with Various Axial Ligands: A Promising Class of Multifunctional Molecular Conductors 44 N U/S 2TAY08-3TAY09
THESIS AND DISSERTATION GRANT	
Ms. Cynthia Cudia *Accountancy*	Role of Entrepreneurship in Poverty Mobility in the Philippines 31 D U 2TAY14-3TAY14
SABBATICAL LEAVE PROJECT	
Dr. Bernardo Lejano *Civil Engineering*	Development of a Numerical Analysis Scheme to Evaluate the Structural Performance of Reinforced Concrete Beam Retrofitted with Turnbuckle Exterior Post Tensioning 28 S U 1TAY14-3TAY14
Dr. Ricardo Puno *TRED*	The Eschatological Vision of Matthew (MT 25:1-13) and Its Applications for Religious Educators 55 S U 3TAY06-3TAY07
Mr. Victor Gojocco *Philosophy*	A Philosophical Study of the UFO Phenomenon in a Philippine Perspective 05 S U 1TAY09-1TAY10
Dr. Emelina Mandia *Biology*	Vegetation Inventory Integrated with GIS for Ilin Island, Southwestern Mindoro 16 S U/C 1TAY03-1TAY04
Dr. Anamy Ma. Paano *Chemistry*	Metabolites from Piptoporus Betulinus Chloroform Extract (PBC) [Original title: Mushroom Metabolites: Their Extraction, Purification, Chemical Structure, and Physiological Properties] 43 S U 2TAY05-2TAY06
GENERAL EDUCATION MODULE	
Ms. Alicia Manlagnit *Behavioral Sciences*	Understanding Human Biology and Culture Through Transformative Learning: A Manual for Teachers 02 GE C 2TAY05-3TAY05
Dr. Lourdes Guidote Dr. Marissa Noel *Chemistry*	Materials Development Project for General Education Program: Modules for the Chemistry Component of the 6-unit Material Science Courses for the General Education Curriculum 38 GE C 1TAY06-2TAY06
ST. MIGUEL FEBRES DE CORDERO RESEARCH AWARDEE WITH URCO-FUNDED PROJECT	
Dr. Rhoderick Nuncio *Filipino*	OMNIBUS at ang Misteryo ng Pugot na Ulo (isang nobela, political thriller, detective fiction) 13 C U 1TAY13-1TAY14 Creative work
INTERDISCIPLINARY RESEARCH (IR) PROJECTS	
Dr. Divina Edralin, *MOD* *Project Coordinator* Dr. Ms. Victoria Tibon, *DSI* Mr. Florenz Tugas, *Accountancy* *Project Team Members*	An Action Research on Women Empowerment and Youth Development for the Poor Sectors of Three Parishes in Caloocan, Manila, and Mandaluyong 08 IR U 3TAY11-3TAY12

PROPONENT/DEPARTMENT	PROJECT TITLE/NO.
Ms. Chelsea Celestino *Project Coordinator, Computer Technology* Ms. Charibeth Cheng, *Software Technology* Mr. Jeffrey Leonard Cua, *Software Technology* *Project Team Members*	WHIZ: Research Data Portal 03 IR S 1TAY10-3TAY10
Dr. Ma. Divina Gracia Roldan, *Political Science* *Project Coordinator* Dr. Francisco Magno, *Political Science* Dr. Cheryll Soriano, *Communication* Ms, Charibeth Cheng, *Software Technology* *Project Team Members*	Twitter Use During Typhoon Yolanda: Exploring Civic Engagement in Calamities 06 IR U 1TAY14-3TAY14
Dr. Elmer Dadios, *MEM* *Project Coordinator* Dr. Alvin Culaba, *ME* Mr. Edwin Sybingco, ECE Mr. Laurence Gan Lim, *ME* *Project Team Members*	Design and Development of Underwater Robot System 01 IR U 1TAY12-1TAY13
Dr. Elmer Dadios, *MEM* *Project Coordinator* Mr. Reggie Gustilo, *ECE* Mr. Laurence Gan Lim, *ME* Dr. Edwin Calilung, *MEM* *Project Team Members*	Use of Computer Vision to Control the Water Quality of Tiger Prawn Aquaculture Based on Its Behavioral Patterns 02 IR U 1TAY12-1TAY13
Dr. Anna Bella Siriban-Manalang, *Industrial Engineering* *Project Coordinator* Dr. Ma. Carmen Lagman, *Biology Department* Dr. Edgar Doña, *San Miguel Infrastructure Corporation* *Project Team Members*	Assessment and Trends of Land Use Efficiency in the Philippines: A Regional Perspective Component 1: Land Use Patterns And Trends in the Philippines 05 IR 3TAY09-3TAY10
Dr. Consolacion Ragasa *Project Coordinator, Chemistry* Dr. Esperanza Cabrera, *Biology* Dr. Oscar Torres, *Chemistry* *Project Team Members*	Bioactivities of the Crude Dichloromethane and Aqueous Extracts and a New Triterpene from *Glinus oppositifolius* 10 IR U/S 3TAY11-1TAY13
Dr. Derrick Ethelbhert Yu, *Chemistry* *Project Coordinator* Dr. Michael Angelo Promentilla, *Chem. Eng'g.* Dr. Gil Nonato Santos, *Physics* *Project Team Members*	Synthesis of Functionalized Metal Phthalocyanine-TiO2 Nanoparticles as Photocatalytic Paint Additive for Degradation of Organic Air Pollutants 05 IR U/S 1 11
RESEARCH PROGRAM WORKSHOP (RPW)	
Dr. Ma. Luisa Enriquez, *Physics* *Chair* Dr. Wilfredo Licuanan, *Biology* Dr. Esperanza Cabrera, *Biology* Co-chairs	Bleaching and Infectious Diseases in Philippine Corals: Building DLSU's Research Capability to Study Diseases of Marine Organisms 07 RPW AY12-13

EXTERNALLY FUNDED PROJECTS
AY 2014-2015

PROJECT DIRECTOR/ASSOCIATES	PROJECT TITLE/NO.	FUNDING AGENCY
DLSU-ANGELO KUNG INSTITUTE FOR ECONOMIC AND BUSINESS STUDIES (DLSU-AKI)		
Dr. Tereso Tullao, Jr.	The Higher Education Accountability and Transparency Portal SOE AKI 33 L 3TA13-2TA14	Philippine Business for Education (Pbed)
Dr. Tereso Tullao, Jr. Mr. Marvin Raymond Castell Mr. Angelo Taningco Atty. Santiago Dumlao (outsider)	The Policy Recommendations for the Expansion of the Securitization Market in the ASEAN+3 Countries SOE AKI 20 I 2TA13-3TA13	ASEAN Secretariat
Dr. Ponciano Intal, Jr.	ARTNeT-PEP Policy Forum on Trade, Investment and Domestic Policy Coherence for Inclusive Growth SOE AKI 3 I 2TA08-3TA08	Australian Agency for International Development (AusAID)
CENTER FOR BUSINESS RESEARCH AND DEVELOPMENT (CBRD)		
Dr. Divina Edralin Mr. Mar Andrea Umali Ms. Ma. Cresilda Caning Ms. Kathrine Abbey Cheng	Inventory of Women Entrepreneurship Studies in the Philippines RVRCOB CBRD 59 L 2TA14 -3TA14	Women's Business Council Philippines
Dr. Divina Edralin Dr. Rachel Quero Ms. Kathrine Abbey Cheng	Human Resource Management Manual for Workplace Inclusion RVRCOB CBRD 58 L 2TA14-3TA14	UNILAB Foundation
Dr. Emilina Sarreal Dr. Brian Gozun	Value Chain Mapping of the Philippine Healthcare Industry RVRCOB CBRD 35 L 3TA13-1TA14	TNT Philippines
Dr. Raymund Habaradas Mr. Denver Daradar Mr. Alloysius Paril Mr. Alger Tang Mr. Mar Andriel Umali Ms. Mitzie Ponce-Conchada Ms. Leah Macatangay	Vision 2020: Road Map for the Printing Industry of the Philippines RVRCOB CBRD 31 L 3TA13-1TA14	Philippine Center for Print Excellence Foundation
Dr. Divina Edralin Ms. Liberty Nolasco Mr. Mar Andriel Umali	Women Entrepreneurship in the Digital Age: The Philippine Experience RVRCOB CBRD 24 I 3TA13-1TA14	Foundation for Women's Rights Promotion and Development (Chinese Taipei)
ADVANCED RESEARCH INSTITUTE FOR INFORMATICS, COMPUTING AND NETWORKING (ADRIC)		
Dr. Merlin Suarez	Measuring Physiological Effects of Smells in the Same Chemical Class on Stress Levels of College Faculty Members	ERDT
BIENVENIDO N. SANTOS CREATIVE WRITING CENTER (BNSCWC)		
Dr. Dominador Bombongan, Jr. Dr. Shirley Lua Dr. Dennis Erasga Dr. Romeo Lee	Green Education -UBCHEA (towards a Green Education in the Philippines and Asia-Pacific: Perspectives, Pedagogies Performances) CLA BNSCWC 09 I 1TA13-1TA14	United Board for Christian Higher Education in Asia

PROJECT DIRECTOR/ASSOCIATES	PROJECT TITLE/NO.	FUNDING AGENCY
LASALLIAN INSTITUTE FOR DEVELOPMENT AND EDUCATIONAL RESEARCH (LIDER)		
Ms. Maria Fe A. Ferrer Dr. Alicia Bustos-Orosa Mr. Jasper Alontaga Ms. Valerie Garde-Farol	Evaluation Study of the Pearl Project (E-Tablet of La Salle Green Hills) BAGCED LIDER 30 L 2TA13-3TA13	La Salle Green Hills
Dr. Joyce Orillosa Dr. Carlo Magno Mr. Jeol Durban Ms. Leah Gustilo	Impact Evaluation of the TV Programs of Knowledge Channel BAGCED LIDER 27 L 2TA13-2TA14	Knowledge Channel Foundation, Inc.
Dr. Carlo Magno Dr. Jessie Barrot Dr. A. Borlongan Dr. Leah Gustilo Dr. J. Orillosa Dr. M. Lapinid Mr. Durban Ms. D. Culaba	Impact Evaluation for Industrial Human Resource Development Policy BAG CED LIDER 18 2T13-3TA13	JICA
Dr. Carlo Magno Ms. Marie Leoneth Martinez Ms. Valerie Garde-Farol	The Ability of Public School Students and Teachers in a Standard-based Assessment BAGCED LIDER 14 L 1TA13-3TA13	Asian Psychological Services and Assessment
Dr. John Addy Garcia Dr. Ma. Alicia Bustos-Orosa Dr. Jerome Ouano Ms. Mitzie Conchada	The Role and Contribution of Private Higher Education in the Philippines CED LIDER 07 L 1TA13-3TA13	Fund for Assistance to Private Education
Dr. Minie Lapinid Dr. Auxencia Limjap Mr. Jasper Alontaga Dr. Joyce Orillosa	Evaluation of the Effectiveness of CAI Modules in Mathematics for Intermediate Grade Schools CED LIDER 21 L 3TA12-3TA13	DOST-Science Education Institute
CENTER FOR ENGINEERING AND SUSTAINABLE DEVELOPMENT RESEARCH (CESDR)		
Dr. Jose Biona	Philippine C-Energy Project Jeepney Remanufacturing and Esterified Waste Vegetable Oil Project GCOE CESDR 39 I 2TA13-3TA13"	Cenergy
Dr. Raymond Tan Dr. Kathleen Aviso Dr. Michael Promentilla	Development of Methodology for Calibrating IIM GCOE CESDR 13 L 1TA13-1TA14	Oscar Lopez Center for Climate Change Adaptation and Disaster Risk Management Foundation Inc.
Dr. Rosemry Seva Dr. Alvin Chua Engr. Isidro Marfori III Mr. Conrad Pantua	Design of a Car Floatation System GCOE CESDR 13 L 1TA13-2TA14	Oscar Lopez Center for Climate Change Adaptation and Disaster Risk Management Foundation Inc.
Dr. Alvin Culaba Engr. Isidro Marfori III Dr. Elmer Dadios Dr. Laurence Gan-Lim Dr. Jonathan Dungca Mr. Melvin Cabatuan Dr. Florinda Bacani Dr. Marlon Era Dr. Joel Tanchuco Dr. Raymond Tan Dr. Aristotle Ubando	Development of an Integrated Community-based Micro-Hydro Power System for Socio-economic Sustainability and Inclusive Development in Ifugao Province GCOE CESDR 13 L 3TA12-3TA13	SN Aboitiz Power-Magat, Inc. (SNAP-M)

PROJECT DIRECTOR/ASSOCIATES	PROJECT TITLE/NO.	FUNDING AGENCY
Dr. Raymond Tan Dr. Kathleen Aviso Dr. Michael Promentilla	Development of Optimization Model for Automated Matching of CO_2 Sources and Sinks in Carbon Capture and Storage (ICS) Systems GCOE CESDR 20 L 3TA12-3TA13	NRCP
Dr. Susan A, Roces Dr. Raymond Tan Dr. Florinda Bacani	Transesterification of *Jatropha curcas* Oil and Coconut Oil by Microwave Irradiation GCOE CESDR 34 L 2TA09-2TA10	DOST-Philippine Council for Industry and Energy Research and Development
Dr. Pag-asa D. Gaspillo	Development of Compact and Efficient Electro-Coagulation Treatment System for Pharmaceutical Waste Products and other Pharmaceutical and Personal Care Product (PPCP) Residues in Wastewater GCOE CESDR 36 L 2TA07-2TA08	
Dr. Alvin Culaba	A Market Study on Energy Efficiency and Solar Roof Top Technology COE CESDR 16 I 3TA12-3TA12	UNSW c/o Mark Fogarty
Dr. Susan Gallardo	Development of a Photocatalytic Reactor with Immobilized AC/TION for Torquoise Blue Removal GCOE CESDR 32 L 1TAY08-3TAY10	ERDT
Dr. Andres Winston Oreta	Development of a Multi-hazard and Risk Assessment Method for Heritage Buildings: Case of Iloilo City GCOE CESDR 89 L 3TA12-2TA14	
Dr. Lessandro Estelito Garciano	A Study of the Structural Integrity of Roofing of Low-cost, Wood-framed Residential Houses GCOE CESDR 90 L 3TA12-2TA14	
Mr. Dennis Cruz	A Closed-Loop Supply Chain Model Considering Extended Producer Responsibiltiy and Mulitiple Generation Product Strategy A bi-Objective Mathematical Model for a Simultaneous Pick-up and Delivery Green Vehicle Routing Problem with Backhaul and Time Windows	
Dr. Eppie Clark	An Integrated Approach to Manufacturing Sustainability GCOE CESDR 05 L 1TA12-3TA14	
Dr. Jonathan Dungca	Development of a Probabilistic Liquefaction Potential Map for Metro Manila	
Mr. Ronaldo Gallardo	Evaluation of Properties of Pervious Concrete with Fly Ash and Bottom Ash	
Dr. Mary Ann Adajar	Hydrocompression Settlement of Different Embankment Fill Materials	
Dr. Andres Winston Oreta	Development of a Code-based Brief Seismic Diagnosis Tool for Concrete Buildings Considering Vertical Irregularities	

PROJECT DIRECTOR/ASSOCIATES	PROJECT TITLE/NO.	FUNDING AGENCY
Dr. Alexis Fillone	Mode Change Behavior of Bus Passengers to Rail System under Improved Rail Operations	ERDT
Dr. Edwin Calilung	Detection of Floating Impurities in Filled Beverage Bottles using Digital Image Processing Techniques GCOE CESDR 83 L 1TAY11-1TAY12	
Mr. Alexander Abad	Design and Implementation of a 0.35 um Low Voltage, Selectable CMO5 Fractional Order Differentiator	
Dr. Nilo Bugtai	Design for Assembly of the Jointed Articulating Laparoscopic Tool	
Dr. Elmer Dadios	Design and Development of a Fuzzy Logic Controller for an Earthquake Simulator/ Shake Table	
CENTER FOR NATURAL SCIENCES AND ENVIRONMENTAL RESEARCH (CENSER)		
Dr. Ma. Luisa Enriquez Dr. Marissa Noel	Glucosinolates in Selected Vegetables and their Anti-cancer Properties COS CENSER 56 L 3TA11-1TA12	Philippine Council for Health and Development, DOST
Dr. Consolacion Y. Ragasa Dr. Dennis Raga	Angiogenic Property of Small Non-polar Molecules from *Ardisia* Sw. Leaves COS CENSER 65 L 3TA11-1TA12	Metro Manila Health Research and Development Consortium/Philippine for Health Research and Development (MMHRDC/PCHRD)
Dr. Gil Nonato Santos Dr. Nikko Quevada	Synthesis and Characterization of Metal Oxide Nanostructures Using Static Vapor-Phase Technique COS CENSER 68 L 3TA09-2TA10”	Commission on Higher Education (CHED) [70%] DLSU [30%]
JESSE M. ROBREDO INSTITUTE OF GOVERNANCE (JRIG)		
Dr. Francisco Magno	Enhancing Community Planning and Disaster Preparedness in Abra CLA JMRIG 10 I 1TA13-3TA13	Phil-Australia Community Assistance Program
	Empowered Participatory Governance towards Progress in North Cotabato Communities (EPG-Progress) CLA JMRIG 12 I 1TA13	Fundacion Accion Contra El Hambre
	Institute of Environmental Governance (IEG) CLA JMRIG 05 L 3TA11-12	Tanggol Kalikasan
	Fostering Knowledge Coalition for Open Governance through Engaged Universities (Phi) CLA JMRIG 01 I 1TA13-2TA14	Australian Agency for International Development
SOCIAL DEVELOPMENT RESEARCH CENTER (SDRC)		
Dr. Diana Therese Veloso	Rapid Needs Assessment for Rebuilding Institutions and Safe Environment (RISE) for Children in the Visayas after Super Typhoon Yolanda CLA SDRC 34 L 3TA13-1TA14	Children’s Fund

PROJECT DIRECTOR/ASSOCIATES	PROJECT TITLE/NO.	FUNDING AGENCY
Dr. Ma. Angeles Lapeña	Health Facility Assessment on Zuellig Family Foundation's Donated Barangay Health Stations and Birthing Units CLA SDRC 25 L 2TA13-3TA13	Zuellig Family Foundation
Dr. Maria Caridad Tarroja	Baseline Data Gathering for Inclusive ECCD and Protection Project in Taguig, Pateros and Parañaque CLA SDRC 52 I 2TA14-2TA14	Save the Children International
Dr. Melvin Jabar	The Higher Education Accountability and Transparency Portal CLA SDRC 29 L 3TA13-3TA14	Philippine Business for Education (Pbed)
Dr. Maria Caridad Tarroja	WHO Disability Assessment Survey in Yolanda-affected Areas in the Philippines CLA SDRC 36 I 3TA13-1TA14	WHO
Dr. Melvin Jabar	Comparative Study on Parental Involvement in the Philippines and Japan: Impacts on Elementary Students' Educational Outcomes CLA SDRC 32 I 3TA13-3TA14	The Sumitomo Foundation
Dr. Ferdinand Dagmang	Evaluation of the Basic Ecclesial Community of PCP II	MISSIO Munich

De La Salle University Publishing House

Introduction

In its continuing effort to achieve the University's mission of excellence in research and education, the DLSUPH has sustained its initiative in breaking new grounds by publishing the works in various genres of both established and new scholars in the field of Philippine studies. It also publishes journals in different disciplines including education, business and economics, the social sciences, and the physical sciences, as well as specialized and peer-reviewed research studies that cater to circumscribed readership.

These publications have endeavored to enhance scholarship, foster discussions at the level of concepts and ideas, and encourage participation in public debates and discussions with the goal of accelerating the momentum for positive change in society.

Continuing the Pursuit of its Vision

DLSUPH Executive Publisher Dr. David Jonathan Y. Bayot, (David, to friends and colleagues) saw the vision sparked by then DLSU President and Chancellor Br. Ricardo P. Laguda FSC of "a university press that would do exemplary publishing work that would be recognized by the international academic community, with the Chicago Press as its model" as a challenge that was too tempting not to take up. Assured with freedom to steer the wheel and navigate his way through the intricacies of the process and demands of the publishing business, he buckled down to work and laid down the priorities of his unit.

David's optimism regarding the attainment of the vision for DLSUPH was inspired by the warm reception of its first two major projects, *Poetics in a New Key* and the Springer-published *The Asia-Pacific Education Researcher* that had scored the highest in terms of impact factor compared to journals in the subject area of education in the Asia-Pacific, on an international scale.

The next two to three years after transitioning from the APO, DLSUPH has proven that the size of its office or its staff does not matter much in pursuing its vision. It is the able and competent leadership and the dedication and hard work of the DLSUPH team

The DLSU Publishing House (DLSUPH), the publishing center of the University, is a unit under the Office of the Vice Chancellor for Research and Innovation. Since it transitioned on May 16, 2012 from the former Academic Publications Office (APO), the DLSUPH has envisioned itself as a notable center of knowledge production and dissemination—through book and journal publication—in both national and international milieus. The publishing house assumes the task of being a key conduit of ideas reaching out to readers worldwide—in the hope that readers will process, transform, and eventually, mobilize these ideas for Philippine communities and for a better society, in general.

The DLSUPH seeks to enhance the educational mission of De La Salle University. It supports the University's mission of excellence in research and education by publishing academic and trade books, and scholarly journals—in both print and electronic editions.

Its Publication Board meets once a term to review particularly the manuscripts from DLSU and non-DLSU authors that have already gone through the standard procedures for evaluation. Publication is solely determined by the merits of the manuscript.

that have determined its continuing growth and success. Who would have thought that this OVCRI unit that is housed in an unimposing office on the 6th floor of Yuchengco Hall, and manned by four personnel (including its executive publisher) would survive the infancy stage and transcend institutional constraints to become the University's other "window to the world" and a sustainable world-class publishing center in the country?

David's first strategy, upon assuming its leadership, was to "print on demand". He, thus, engaged the services of Books on Demand Philippines, Inc., a full-service printer that is capable of printing, cutting and binding a book in ten minutes or less while maintaining DLSUPH's specifications to ensure quality and compliance with international standards. His next move was an even bolder one. He invited the most prominent authors in the international academic circles, to have the first releases of their manuscripts published by DLSUPH, a strategy that he has sustained to this day. The first three foreign authors to come aboard the DLSUPH were American poet, scholar and critic Marjorie Perloff; and British literary critics Christopher Norris and Catherine Belsey. It was this second strategy that has further enriched scholarship in the University by fostering a cross-pollination of ideas and laying the platform for encouraging public debates that would sustain and extend the momentum for achieving positive change in human society, and providing broader possibilities for scholarly pursuits.

The Philippine edition of Perloff's *Poetics in a New Key* significantly came out at the time DLSUPH turned one year old in 2013. In her preface, the world's foremost scholar of *avant-garde* literature and the arts revealed that when she learned David Jonathan Y. Bayot wanted to publish a collection of her interviews and essays, she was "at once honored and mystified." Shortly after its release, DLSUPH received a request from the University of Chicago Press for a license to publish the book, an undertaking which made *Poetics in a New Key*, the first Philippine-published book in history to be licensed by a major university press for international circulation. The international edition of *Poetics in a New Key* by the University of Chicago Press was published in 2014.

Other foreign literary giants who later joined the DLSUPH included: cultural materialist Jonathan Dollimore, deconstruction and James Joyce scholar Derek Attridge and the first Poet Laureate of the Museum of Modern Art, Kenneth Goldsmith.

The international edition of the DLSUPH book, *Derek Attridge in Conversation* was the first volume in the Crticial Voices Series, a DLSU signature project conceived by David, and jointly published by DLSUPH and Sussex Academic Press (SAP) under the general editorship of David himself. Both the Philippine and the international editions of the book were featured in "The Languages of Literature" conference at the University of York that ran from May 22 to 24, 2015—an event held in honor of Derek Attridge on his 70th birthday.

Responding to the Challenge of Sustainability

As a university publishing house, a significant number of DLSUPH's publications are donated to various libraries in the country to fulfill the Lasallian educational mission. This being the case, although the publishing house is expected to produce academic and trade books, and scholarly journals—in both print and electronic editions compliant with international standards, it is not intended primarily as an income-generating venture. Nevertheless, David has regarded the DLSUPH as a business unit that should achieve a certain level of self-sustainability. Thus, on its second and third years of operation, DLSUPH continued to forge partnerships with local and international foundations and funding agencies for the publication of scholarly outputs. For AY 2013-2014 and AY 2014-2015, the DLSUPH collaborated with the following:

- Pontifical Academy of Social Sciences (PASS) in Rome, Italy to produce *Toward a Universal Social Ethics: The Catholic*

Contribution in 2013 authored by Ronald Minnerath, the Archbishop of Dijon, France and a professor at the PASS

- National Research Council of the Philippines for the publication of the monographs *International Migration, Remittances and Economic Development in the Philippines* in 2014 and *Health and Social Policy Issues of BPO Workers in the Philippines: Is Happiness at Work Attainable?* in 2015. The first monograph was authored by the following faculty of the University of the Philippines Diliman: Dr. Ernesto M. Pernia, Professor Emeritus of Economics; Mr. Jackson L. Ubias, Senior Lecturer of Economics; and Ms. Maria Rosel S. San Pascual, Assistant Professor of Communication. The second monograph was authored by Dr. Socorro M. Rodriguez. Research Director of the St. Michael's College of Laguna and Dr. Nimfa B. Ogena, Professor at the Population Institute, College of Sciences and Philosophy, UP Diliman
- Yuchengo Center (YC) for *Gender, Labor, Ageing: Selected Papers on Social Issues in Development (1994-2012)* which came out in 2014, and authored by the YC President, Dr. Trinidad S. Osteria
- International Development Research Centre (Canada), Global Entrepreneurship Monitor (GEM), and the Angelo King Institute for Economic and Business Studies to produce *Entrepreneurship in the Philippines: 2014 Report* by a team of faculty from the Ramon V. Del Rosario College of Business and the School of Economics, led by Dr. Aida Licaros Velasco. The other faculty comprising the team were Ms. Paulynne J. Castillo, Dr. Mitzie Irene P. Conchada, Dr. Brian C. Gozun, Dr. Gerardo L. Largoza, Dr. Junette A. Perez, and Dr. Emilina D. Sarreal
- DLSU Center Business Research and Development to produce *Rethinking Business: Responsibility and Sustainability Governance and Finance* in 2014; the book was edited by Dr. Raymund B. Habaradas, Associate Professor of Management and Organization, and Mr. Denver Bingski D. Daradar, Lecturer of Management and Organization
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)—a global society advancing human well-being through sustainable technology for the built environment with over 54,000 members worldwide—for the publication of *Chronicles of Refrigeration and Air-conditioning in Tropical Philippines: The Cold Facts"*; the volume which came out in 2015 was edited by Dr. Alvin Y. Chua
- The Women's Business Council Philippines—an advocacy group composed of top women business leaders and entrepreneurs—and the DLSU Center for Business Research and Development for the production of *Women Entrepreneurship Studies in the Philippines* which was published in 2015 and authored by Dr. Divina Edralin, Ms. Ma. Cresilda M. Caning, and Ms. Kathrine Abbey S. Cheng

In the absence of a book marketing department/manager, DLSUPH has continued to tap Solidaridad Bookshop, Rarebook Enterprises, and Booktrends, Inc., to carry the print editions of its books in their display shelves to ensure that they are visible and accessible to the consuming public. In September 2013, DLSUPH entered into an agreement with Buqo, an online bookstore managed by Summit Media, which offered to convert DLSUPH books into electronic form for free. In return, DLSUPH receives a certain percentage of the sales of the e-books.

Responding to Current Realities

David has set high goals for DLSUPH yet keeping his feet on the ground to easily and

adequately respond to current realities and problems confronting local book publishing and printing. Unintimidated by the challenges of the digital age, DLSUPH employs the latest technology in the preservation, design, production, and dissemination of its output.

In August 2013, the DLSUPH held a symposium entitled "From Table to Tablet: Book Production From/Beyond the Stone Age." Among the topics of the symposium were: "Why the Book Will Not Die" by Dr. Patricia May B. Jurilla of the University of the Philippines in Diliman, "The E Network: What E-books Mean for Local Publishing" by Ms. Honey de Peralta of Flipside Publishing Services, Inc., and "Technologies of the Page: A Study of Legibility in Walt Whitman's *Leaves of Grass* and Jean Keller's *The Black Book*" by Prof. Francisco Guevara of DLSU.

In November 2014, DLSUPH participated in the 5th Philippine International Literary Festival and Book Industry Summit sponsored by the National Book Development Board and held at the Bayanihan Center in Pasig City. Discussed during the summit were the sustainability of the book industry amidst ASEAN integration and globalization, and other pressing issues confronting the book publishing industry.

Growing its Niche in the Business of Scholarly Publishing

Despite its modest office and a staff of four, DLSUPH has managed to make itself visible in book fairs and festivals as well as in industry organizations. It recognizes that networking with reputable organizations is a key to achieving growth and success in the publishing business.

In September 2013, the DLSUPH participated in AKLATAN: The First All-Filipino Book Festival that was organized and hosted by VisPrint, Inc. in cooperation with the National Book Development Board and held in Makati City.

DLSUPH marked another milestone in October 2014, when it forged a partnership with The Seventh Quarry Press (TSQP), which is based in Swansea, Wales, UK for the revised edition of *The Cardinal's Dog and Other Poems* by Christopher Norris (first published by DLSUPH). The partnership enables Norris's book to reach a wider audience through the network of TSQP in the UK and the US.

In 2015, DLSUPH added a feather in its cap when it received a Citation from the Manila Critics Circle for *"Critics in Conversation,"* another DLSUPH signature project that was also conceptualized by David himself. Comprising the series are: "Catherine Belsey in Conversation," "Derek Attridge in Conversation" (co-published with SAP), "John Schad in Conversation," "Jonathan Dollimore in Conversation," "Kenneth Goldsmith in Conversation," "Rachel Bowlby in Conversation," and "Susan Stewart in Conversation." Citations are given to sets or series of books that push the frontiers not only of writing but also of publishing. Truly, the DLSUPH's acclaimed series has put the Philippines on the world map of literary theory.

JOURNALS PUBLISHED

The Asia-Pacific Education Researcher (TAPER) is an international refereed journal of original research in education, published biannually by the Academic Publications Office, De La Salle University, Manila, Philippines. It aims principally to provide a venue for the publication of empirical and theoretical studies in education, with emphasis on the experiences of successful educational systems in the Asia-Pacific region and of the national educational systems therein that are presently underrepresented in the research literature.

The journal seeks to publish two types of articles:

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  - integrative and critical reviews of research on a specific educational topic conducted in a specific country in the Asia-Pacific region,
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The Asia-Pacific Education Researcher is listed in Thomson Reuters ISI Scientific Database, SciVerse Scopus, indexed and abstracted in the Social Sciences Citation Index, Social Scisearch, and Journal Citation Reports/Social Sciences Edition, and EBSCO.

The Asia-Pacific Education Researcher is accredited by the Philippines' Commission on Higher Education as one of the most distinguished Philippine journals, and is classified in Category A of scholarly journals in the Philippines.

Editor: Dr. Allan B.I. Bernardo

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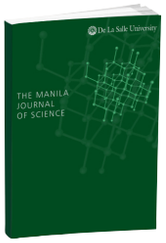

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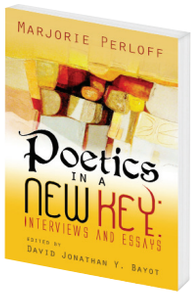

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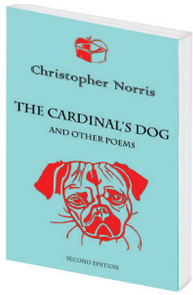

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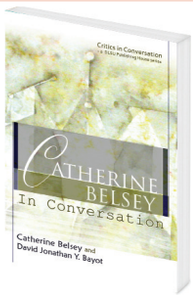

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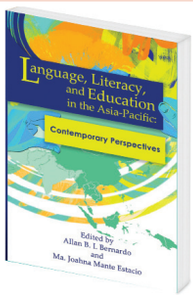

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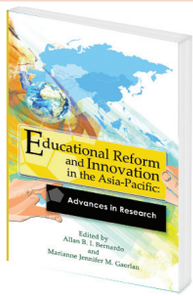

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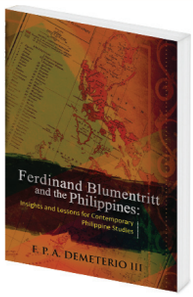

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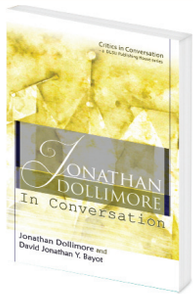

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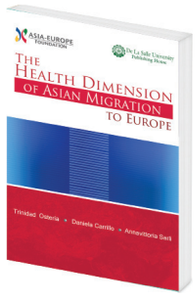

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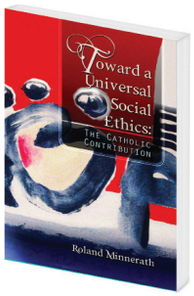

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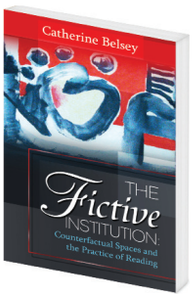

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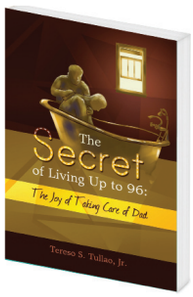

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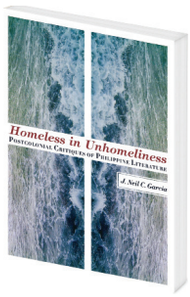

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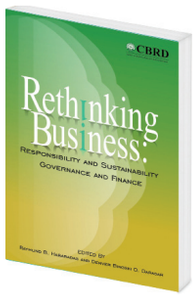

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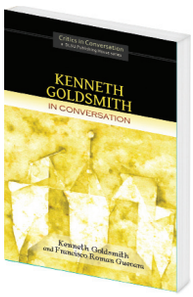

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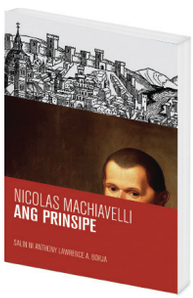

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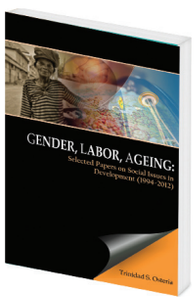

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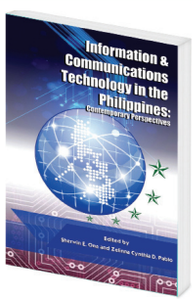

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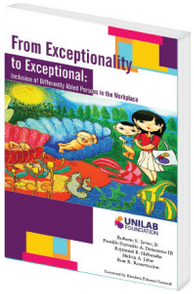

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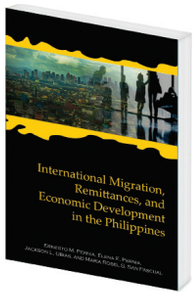

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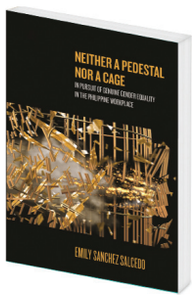

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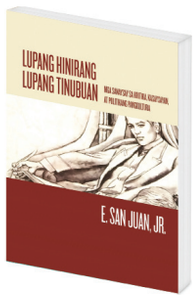

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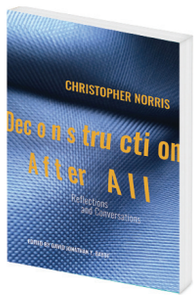

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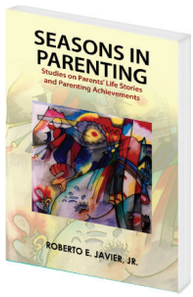

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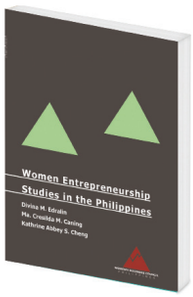

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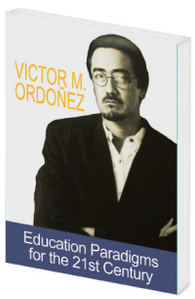

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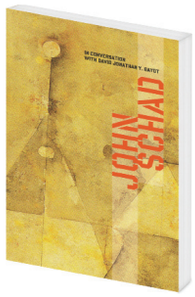

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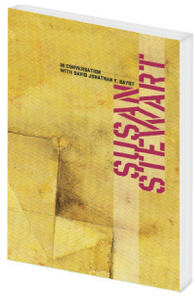

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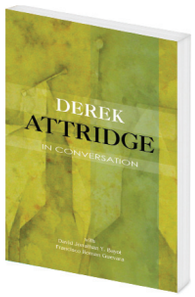

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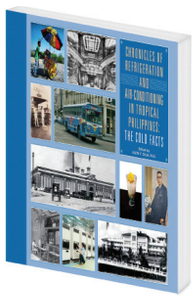

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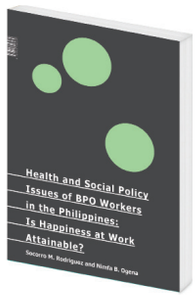

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To accomplish its goals, DIPO works closely with the DLSU Innovation and Technology Office (DITO), a service unit that is also under the VCRI that functions as the university's franchise of the IPOPHL Innovation and Technology Support Office (ITSO) network, and the technology business incubator, Animo Labs Foundation, Inc. The IPOPHL ITSO network is composed of over 50 universities and colleges from all over the country. Its program aims to strengthen local and institutional capacity to access patent information and the use of the patent system. Specifically, the purpose of the program is to fulfill the mandate of IPOPHL relative to the 3D IP 2020 vision, which is "to demystify and democratize the patent system and use it as a tool for national development."

Confronting the Challenges. The process of actively promoting IP awareness, of instilling respect for and upholding it in campus, and of encouraging faculty and students to exercise their rights to apply for "exclusivity" over their creation, is long and tedious. This may be partly due to lack of information, and the habit of "copying" which apparently is deeply entrenched in Filipino culture. Recognizing these 'stumbling blocks', DIPO has devised mechanisms and designed forms to spare them from personally having to go through tedious procedures. Inventors simply need to provide DIPO with a duly accomplished Disclosure Form which can be downloaded from the DIPO website. Upon receipt of all the required information, DIPO, upon evaluation, translates

The De La Salle University Intellectual Property Office (DIPO) was established in 2008 following the reorganization of the Office of the Associate Director for Intellectual Property (AIPO), whose original mandates were to "develop an intellectual property strategy for DLSU," "assist faculty and students in filing for protection of intellectual property," and "educate the academic community on the important role of IP protection in securing inventions, facilitating technology transfer, and encouraging inventors to disclose their work." Today, DIPO as an office under the Vice Chancellor for Research and Innovation (VCRI) continues to fulfill these mandates while taking on new responsibilities and developing capabilities that are crucial in a knowledge-driven economy.

the information into a Patent Application. The inventor is expected to cooperate with the DIPO in the application process all the way to its eventual commercialization. DIPO notifies the owner of every step in the patent process up to the grant of the patent. Atty. Christopher Cruz, the University Legal Counsel, is optimistic that the faculty and students will gradually learn to appreciate the personal and social benefits and advantages of applying for IP protection over their creations, as may be deemed appropriate.

Blazing the Trail for KTTO

The onset of the knowledge economy, which is defined as "an economy in which growth is dependent on the quantity, quality, and accessibility of the information available, rather than on the means of production" has made the role of universities more complex and the demands on these institutions more challenging. In the knowledge economy, great value is placed on intellectual property and a highly-trained workforce. These developments have made Knowledge and Technology Transfer Offices (KTTOs) central to the functioning of universities.

In DLSU, DIPO, DITO and Animo Labs, together, comprise the DLSU Knowledge Technology Transfer Office (KTTO). The KTTO enables the University to interface with industry and government, and contribute toward addressing the most pressing needs and problems of society.

As one of the first universities in the country to establish a KTTO, DLSU serves as a model to other institutions that are increasingly becoming aware of the changing role of universities in the innovation ecosystem. Along with other universities and colleges, DLSU receives assistance from the United States Agency for International Development (USAID)-funded Science, Technology, Research, and Innovation for Development (STRIDE) project in setting up its KTTO. The Department of Science and Technology (DOST) also provides support by funding the Animo Labs technology business incubator.

The DLSU Innovation and Technology Office (DITO). DITO functions as DLSU's Innovation and Technology Support Office (ITSO), which is part of the network of the Intellectual Property Office of the Philippines (IPOPHL).

DITO's mission is to support the creation and development of innovative, creative, and sustainable products and services that improve lives, especially those of the poor and marginalized. It selects the most promising research projects undertaken in the University in terms of commercial prospects, and further develops them. Thereafter, they are forwarded to Animo Labs for incubation. It also provides services that include patent searching, patent drafting, and patent filing. It is responsible as well for the creation and maintenance of a University IP database.

The Animo Labs Foundation, Inc. Animo Labs is a business incubator funded by the Department of Science and Technology (DOST). It takes the most promising technologies and teams after they are screened by DITO for further product development and human resource training, respectively, as well as for business planning.

The DLSU KTTO Activities and Achievements

Since 2011, DIPO and DITO, which have been led by Atty. Cruz, have continued to manage a growing team of individuals who are passionate about the work of a KTTO.

Members of the DITO team regularly attend IP training sessions and seminars under the ITSO program that are sponsored by the IPOPHL, and the World Intellectual Property Organization (WIPO). The team cooperates with the ASEAN, the Intellectual Property Alumni Association (IPAA), the Japan Patent Office (JPO), the European Patent Office (EPA), the United States Patent and Trademark Office (USPTO) and the Licensing Executives Society (LES), among others, to equip its members with the necessary tools, expose them to relevant

experiences in handling IP applications and advocacies, and update them on IP developments, to enable them to better fulfill their mandate.

From 2012-2015, DITO has conducted prior art searches and has drafted patent applications for at least seven (7) inventions from the College of Engineering and the College of Science. In June 2013, DITO filed patent applications for (1) Roboleg; (2) Crab Meat Extractor; and (3) Laparoscopic Tool. More recently, it also conducted a prior art search and drafted a patent application for a Food Fortification Process developed by Chemistry Department faculty, Dr. Drexel Camacho.

As the leader of both DIPO and DITO, Atty. Cruz keeps himself updated on the latest developments in the IP and innovation ecosystem. In 2012, he underwent training for the Lexis-Nexis Prior Art Search at the Mapua Institute of Technology, and attended a seminar on "Pathways to Progress: Advancing IP Rights in SMEs" hosted by the IPAA. In June 2013, he participated in the Licensing Academy Training at the University of California, Davis School of Law and Public Intellectual Property Resource for Agriculture (PIPRA), and in November of that same year, he completed the 4th Advanced International Certificate Course on IP rights using IP panorama e-learning contents, conducted by the Korean Intellectual Property Office, the WIPO, the Korea Advanced Institute of Science & Technology, and the Korea Invention. In February 2015, he joined ITSO managers from across the country at the Association of University Technology Managers (AUTM) 2015 annual meeting in New Orleans. The valuable insights he gained from these trainings and gatherings and the unwavering support of STRIDE and RTI International have greatly helped Atty. Cruz in managing the two offices that he heads and in sharing his own insights in seminars and conferences where he is invited to serve as resource speaker.

The other DITO and DIPO staff also benefit from similar training and exposure. In November 2012, DITO members attended the World Trade Organization seminar on "International Trade Issues and Intellectual Property Rights" at the Manila Peninsula Hotel.

In view of its accomplishments, DIPO and DITO have received recognition from external organizations for their efforts. DITO was named a "unique feature of DLSU" by the PAASCU while DLSU was awarded as one of the universities to be included in the WIPO University Initiative Program during the December 2012 WIPO Conference.

Educating Students on IP. To ensure that DLSU KTTO services reach students, DIPO advises the Intellectual Property Associates (IPA), a student organization that promotes IP awareness to the University students. The IPAs learn about IP protection issues in the Philippines through regular visits to the IPHOPHL headquarters at McKinley Hill, Taguig City. DIPO has recently started advising Unboxd, a newly-formed student organization that guides students through the commercialization of their ideas. Unboxd also holds business plan competitions, hackathons, and other student events on technology and entrepreneurship, in collaboration with other organizations within and outside the University. Both IPA and Unboxd are actively involved in the activities of DIPO and DITO and many of their members help these offices organize events and workshops.

DITO and DIPO also accept graduate students as interns. For the second and third terms of AY 2013-2014, DITO/DIPO hosted 3 students from the DLSU College of Law as interns. DITO and DIPO also maintain strong relationships with DLSU alumni. In 2012, for example, the DITO team met with officials of Engineering Freshmen '70 to discuss possible collaborations.

On the strategy to make students aware of their IP rights relative to their theses or dissertations, Atty. Cruz has reiterated that before a student works on his/her thesis or dissertation, the question of who will own the IP to the student's creation should be discussed. At present, the mentor determines if there is a potential patentable creation that can emanate from a student's work; thereafter,

he reports it to the IP auditor appointed in each college. Atty. Cruz has been coordinating with the administrators and IP auditors concerned in the different colleges to create mechanisms for the efficient flow of information on patentable creations from their respective colleges to DIPO. The IP auditors, in turn, actively help monitor IP activities in their respective colleges.

The DLSU Innovation and Technology (DITECH) Fair. The DLSU KTTO, with support from the Office of the VCRI, has been holding the November DITECH Fair annually since 2012. The Fair has been a venue for showcasing the different projects and inventions across DLSU's colleges/school with the objective of creating greater awareness on the importance of IP protection and innovation.

The first DITECH Fair was held on November 27-29, 2012. It featured around 40 projects/inventions from DLSU students and faculty, and was attended by 1,500 guests. During the Fair, there were talks touching on academic entrepreneurship, technology commercialization, intellectual property protection, and the Philippine California Advanced Research Institutes project. The Fair also hosted Dr. Harold Raveché, founder and president of Innovation Strategies International, a global education-innovation consulting firm. Since its inception, the DITECH Fair has become an annual venue for DLSU students and faculty, and representatives from academia, industry, and government to meet, discuss important developments in the local innovation ecosystem, and explore and form collaborations.

Collaborations with DLSP. De La Salle Philippines (DLSP), a network of Lasallians within the Lasallian East Asia District, recognizes the expertise of DIPO and DITO on matters related to IP protection. DITO and the DLSP legal team have had meetings since 2012 to explore the possibility of DLSU-Manila helping the other La Salle schools in the country with IP activities and projects. DITO has also had conversations with DLSU-Dasmariñas and the DLSU College of St. Benilde regarding their participation in DITECH Fairs.

Intellectual Property in the Curriculum

As a member of the ASEAN University Network Intellectual Property (AUN-IP), DLSU acknowledges and supports the undertakings of the ASEAN Project on the Protection of Intellectual Property Rights (ECAP III). ECAP III aims to create an effective national and regional university IP network that will support IP education as well as policy research and formulation in the region. DLSU is committed to implement IP concepts and practices, share experiences on the implementation of its IP policy to formulate a common IP policy before embarking on educational cooperation activities, and gather international best practices concerning IP management. Also, part of the ECAP III project is the offering of courses on IP education to law students and other students toward the development of an "ASEAN IP brand."

Relative to this, as part of DLSU's commitment to ECAP III, the College of Law offers both basic and advanced IP courses while the RVR-COB offers the following IP-related courses:

- Intellectual Property Law – a 3-unit course that introduces undergraduate students to the concept of IP; terms such as copyright, trademark, trade name, patent and invention; and the benefits of registration in and protection under IP.
- Legal Aspects of Advertising and Promotions – a 3-unit course that includes discussions on various kinds of IPs, particularly on trademarks and designs, as well as on legal rights and protection given to their owners.

Future Imperatives

As components of the DLSU KTTO, DITO and DIPO have big plans and ambitions, but are taking small steps to achieve them.

DIPO and DITO continue to respond to current realities and challenges. Today, the

need to increase awareness of IP rights and its effects on society and business among DLSU faculty and students remains a tough challenge, given that IP awareness is relatively low not only in the University but throughout the country. DIPO hopes to achieve an increased awareness of IP. It urges faculty and students to be more conscious of their IP rights and responsibilities. DIPO and DITO encourage them to focus more on how their research projects and inventions can best benefit society.

DIPO will sustain its effort to encourage faculty to file for a patent on their research, invention, etc., as an alternative to publishing in scientific literature, and thereby earn their promotion once the patent is granted. While it is true that the grant of a patent takes around five to seven years from the date of application, planting the "IP seeds" today will enable the researcher/inventor to reap the "patent fruits" in the future.

Despite initial gains and achievements, there is much to be done given the following issues and problems: lack of IP awareness and appreciation among faculty, students, and staff; difficulty in encouraging disclosure of inventions and creative works; inadequate mechanism for IP audit and IP valuation; and, challenges in networking for commercialization.

With the cooperation of the various stakeholders and assistance from external organizations such as STRIDE and IPOPHL, DLSU KTTO is optimistic that it will achieve the vision of developing the arts, science, technology and business. By strengthening research capabilities, providing incentives to IP owners, and nurturing a culture of innovation and respect for IP among the University's faculty, students, and other stakeholders, DLSU's first innovation "success story" can be achieved.

FINANCIAL REPORT

DE LA SALLE UNIVERSITY
Research Expenditure Analysis
AY2013-2014

	JUNE 01, 2013 TO MAY 31, 2014		
	BUDGET	**EXPENSE**	**RATE OF UTILIZATION**
INTERNALLY FUNDED RESEARCH			
DLSU-MANILA			
Sourced from DLSU Budget:			
Research Centers and Offices	147,537,416	39,020,073	26%
Research Deloading	18,000,000	11,394,004	63%
Research Honorarium	362,183	362,182	100%
Sabbatical	10,000,000	15,709,138	157%
Research Incentive I (Longevity)	35,728,094	35,728,094	100%
Reseach Incentive II	23,600,000	23,000,252	97%
Graduate	12,000,000	22,184,307	185%
AUN Seednet	500,000		
ERDT			
Sub-total	**247,727,693**	**147,398,051**	**60%**
Sourced from Depository Funds:			
College Research Funds	739,674	151,646	21%
Research Fellows Fund	945,220	0.00	0%
New PhDs Research Fund	494,667	482,523	98%
Research Faculty Grants	143,713	913	1%
Other Internally Funded Research	1,171,358	234,210	20%
Sub-total	**3,494,633**	**869,292**	**25%**
SCIENCE FOUNDATION			
Scientific Research & Development Grant	3,000,000	1,029,116	34%
Grants for Professorial Chair	17,850,000	10,857,434	61%
Publication Incentive Grants	2,000,000	2,215,394	111%
Faculty Travel Grants	700,000	662,121	95%
Other Grants			
Conference Fees	1,500,000	1,097,391	73%
Other Grants- Angelo King, Sikat 2, CCS-NCCA	3,000,000	4,671,351	156%
Sikat 2		915,864	
Sub-total	**28,050,000**	**21,448,671**	**76%**
Research Overhead Costs:			
Office Space, Electricity, and Water	**59,485,182**	**59,485,182**	**100%**
Total Internally Funded Research (IFR)	**338,757,508**	**229,201,195**	**68%**

	JUNE 01, 2013 TO MAY 31, 2014		
	BUDGET	**EXPENSE**	**RATE OF UTILIZATION**
EXTERNALLY FUNDED RESEARCH			
Research Centers / Units			
AKIEBS	52,841,035	29,858,168	57%
CBRD	561,194	254,912	45%
LIDER	10,839,549	6,974,346	64%
SDRC	21,484,723	12,697,322	59%
BNSCWC	921,878	443,830	48%
AdRIC	16,792,436	10,062,775	60%
CESDR	5,712,869	1,176,257	21%
ARRPET	366,997	5,972	2%
AUN/SEED-Net	7,216,355	3,127,794	43%
CENSER	18,738,919	11,329,012	60%
JRIG	13,689,811	6,880,374	50%
ECE Funded Research	85,997		0%
Sub-total	**149,251,762**	**82,810,762**	**55%**
Scholarship			
AUN SEEDNET	6,226,265	6,269,505	101%
ERDT	52,680,250	27,246,968	52%
CCS DATA CRAFT	11,898,491	7,694,476	65%
CHED SCHOLARS	2,236,025	318,912	14%
DOST-SEI ASTHRDP	3,206,997	4,935,822	154%
DOST -SEI SC	20,143,609	10,067,009	50%
Administrative Research Funds	**8,895,428**	**2,532,244**	**28%**
Grants			
CHED Centers of Excellence/ Development	2,009,240	1,908,619	95%
Sub-total	**2,009,240**	**1,908,619**	**95%**
Total Externally Funded Research (EFR)	**256,548,066**	**143,784,316**	**56%**
TOTAL RESEARCH EXPENDITURE (TRE)	**595,305,574**	**372,985,511**	**63%**
TOTAL RESEARCH EXPENDITURE AS % OF OPEX	**30%**	**19%**	

Note: The basis for computing the Percentage of Research was derived from the following budget:

	Budget	Actual
Total DLSU OPEX Budget AY 2013-2014	1,992,890,000	1,928,359,156
Basis *	1,992,890,000	1,928,359,156

DE LA SALLE UNIVERSITY
Research Expenditure Analysis
AY2014-2015

	JUNE 01, 2014 TO MAY 31, 2015		
	BUDGET	**EXPENSE**	**RATE OF UTILIZATION**
INTERNALLY FUNDED RESEARCH			
DLSU-MANILA			
Sourced from DLSU Budget:			
Research Centers and Offices	153,455,458	40,490,862	26%
Research Deloading	15,000,000	9,465,767	63%
Research Honorarium	550,000	319,298	58%
Sabbatical	15,000,000	15,142,187	101%
Reseach Incentive II	24,500,000	23,695,888	97%
Graduate	9,761,214	8,873,816	91%
AUN Seednet	517,671	706,695	137%
ERDT	–	1,740,992	
Sub-total	**218,784,343**	**100,435,505**	**46%**
Sourced from Depository Funds:			
College Research Funds	749,943	71,798	10%
Research Fellows Fund	945,220	–	0%
New PhDs Research Fund	253,351	1,188,347	469%
Research Faculty Grants	143,257	0	0%
Other Internally Funded Research	1,292,868	162,697	13%
Sub-total	**3,384,640**	**1,422,843**	**42%**
SCIENCE FOUNDATION			
Scientific Research & Development Grant	3,000,000	1,151,075	38%
Grants for Professorial Chair	8,850,000	4,809,996	54%
Publication Incentive Grants	2,000,000	8,161,481	408%
Faculty Travel Grants	700,000	880,562	126%
Other Grants			
Conference Fees	2,700,000	1,457,017	54%
Other Grants- Angelo King, Sikat 2, CCS-NCCA Sikat 2	1,200,000	1,198,080	100%
Sub-total	**18,450,000**	**17,658,211**	**96%**
Research Overhead Costs:			
Office Space, Electricity, and Water	**63,374,554**	**63,374,554**	**100%**
Total Internally Funded Research (IFR)	**303,993,537**	**182,891,113**	**60%**

	JUNE 01, 2014 TO MAY 31, 2015		
	BUDGET	**EXPENSE**	**RATE OF UTILIZATION**
EXTERNALLY FUNDED RESEARCH			
Research Centers / Units			
AKIEBS	64,902,756	25,378,693	39%
CBRD	1,046,658	606,847	58%
LIDER	12,341,709	10,817,488	88%
SDRC	35,082,836	25,811,494	74%
BNSCWC	478,048	482,281	101%
AdRIC	20,342,108	10,694,413	53%
CESDR	47,858,060	35,098,752	73%
ARRPET	361,025	5,519	2%
AUN/SEED-Net	6,365,008	2,377,093	37%
SHORE	13,724,769	9,380,088	68%
CENSER	18,337,009	7,550,567	41%
JRIG	11,052,835	7,082,931	64%
ECE Research Fund	101,914	0	0%
DLSU Food Institute	74,303	9,948	13%
CHED/PHERNet	10,008,236	2,694,035	27%
Sub-total	**242,077,275**	**137,990,149**	**57%**
Scholarship			
AUN SEEDNET	9,925,303	7,160,899	72%
ERDT	33,747,778	34,610,397	103%
CCS DATA CRAFT	14,277,565	7,496,684	53%
CHED SCHOLARS	10,288,675	6,743,172	66%
DOST-SEI ASTHRDP	7,226,698	7,100,325	98%
DOST -SEI SC	25,628,372	14,783,078	58%
Administrative Research Funds	**8,696,276**	**4,245,800**	**49%**
Grants			
CHED Centers of Excellence/ Developments	101,843	9,469	9%
Sub-total	**101,843**	**9,469**	**9%**
Total Externally Funded Research (EFR)	**351,969,785**	**220,139,972**	**63%**
TOTAL RESEARCH EXPENDITURE (TRE)	**655,963,322**	**403,031,085**	**58%**
TOTAL RESEARCH EXPENDITURE AS % OF OPEX	**31%**	**20%**	

Note: The basis for computing the Percentage of Research was derived from the following budget:

	Budget	Actual
Total DLSU OPEX Budget AY 2014-2015	2,104,559,640	2,042,294,632
Basis *	2,104,559,640	2,042,294,632

LIST OF FUNDING AGENCIES 2013-2014

1. ASEAN Secretariat
2. Asian Psychological Services and Assessment
3. Australian Agency for International Development (AusAID)
4. Cenergy
5. Child Fund
6. Commission on Higher Education (CHED)
7. DOST-Philippine Council for Health and Development
8. DOST-Philippine Council for Industry and Energy Research and Development
9. DOST-Science Education Institute
10. ERDT
11. Foundation for Women's Rights Promotion and Development (Chinese Taipei)
12. Fund for Assistance to Private Higher Education
13. Fundacion Accion Contra El Hambre
14. JICA
15. Knowledge Channel Foundation, Inc.
16. La Salle Green Hills
17. Metro Manila Health Research and Development Consortium/Philippine Council for Health Research and Development (MMHRDC/PCHRD)
18. Missio Munich
19. NRCP
20. Oscar Lopez Center for Climate Change Adaptation and Disaster Risk Management Foundation, Inc.
21. Phil-Australia Community Assistance Program
22. Philippine Business for Education (PBEd)
23. Philippine Center for Print Excellence Foundation
24. Save the Children International
25. SN Aboitiz Power-Magat, Inc. (SNAP-M)
26. Tanggol Kalikasan
27. The Sumitomo Foundation
28. TNT Philippines
29. UNILAB Foundation
30. United Board for Christian Higher Education in Asia
31. UNSW c/o Mark Fogarty
32. WHO
33. Women Business Council Philippines
34. Zuellig Family Foundation

LIST OF FUNDING AGENCIES 2014-2015

1. ASEAN
2. Affiliated Network for Social Accountability in East Asia and the Pacific (ANSA-EAP)
3. AUN/SEED-NET JICA
4. Australia Agency for International Development
5. Caucus of Development NGO Networks (CODE-NGO)
6. Center for Budget and Policy Priorities CBPP
7. CHED/PHERNet
8. Commission on Higher Education (CHED)
9. Department of Labor and Employment (DOLE)
10. DOST-PCIEERD
11. Economic Research Institute for ASEAN and East Asia
12. Enel Foundation
13. ERDT
14. Institute for Sustainable Futures of the University of Technology Sydney
15. NRCP
16. Philippine Institute of Development Studies (PIDS)
17. UNEP
18. UNIDO
19. UNILAB Foundation, Inc.
20. World Bank