



# Journal of Sustainability Perspectives

journal homepage: <https://ejournal2.undip.ac.id/index.php/jsp/>



## DLSU-D Green Innovations on Waste Management: Adoption of Greener Lifestyles in New Normal

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### Article Info

**Received:**  
15 March 2021  
**Accepted:**  
25 May 2021  
**Published:**  
1 August 2021

**DOI:**

*Presented in The 6<sup>th</sup>  
International (Virtual)  
Workshop on UI GreenMetric  
World University Rankings  
(IWGM 2020)*

**Abstract** De La Salle University-Dasmariñas (DLSU-D) is one with the call to collective action in responding to global ecological crisis as it adapts to the new normal of creating a safe, sustainable, and healthy university where the experience of God is lived and shared. As the world is currently battling new challenges affecting the environment in the face of COVID-19 crisis, DLSU-D reiterates its stand to lead in sustainable practices that foster caring for our common environmental home. Under the *Black Out! Green In!* flagship program, which is the University's green response to combat climate change, its *Ecological Solid Waste Management Program* (ESWMP) ventures into simple, low-cost, and low technology initiatives. Internal collaboration among faculty, students, and service providers as well as external partnerships with non-governmental organizations (NGOs) and local government units (LGUs) having similar environmental advocacies and lifestyle changing significantly contribute to the innovations and sustainability of the campus waste management program.

### Keyword:

*Ecological Solid Waste Management, Black Out! Green In!* sustainable practices, lifestyle, new normal

## 1. Introduction

Ecological crisis is the crisis referring to the interactions of social individuals with their environment. It is specifically considered to be a major dimension of the multidimensional crisis such as economic, political, cultural and general social levels [1]. Similarly, the human roots of the ecological crisis were examined in the Pope Francis' Encyclical *Laudato Si'*. According to the technocratic paradigm and modern anthropocentrism views, nature is

treated without spiritual and transcendental value and therefore, the solution to global hunger and poverty would depend only on economic growth and technology [2].

Amidst the global health crisis due to COVID-19, De La Salle University-Dasmariñas (DLSU-D) continue to respond to the current global ecological crisis resulted from human-induced activities: climate change, plastic pollution, and COVID-19-related wastes among others as it adapts to the new normal of creating a safe, sustainable, and healthy university where the experience of God is lived and shared. DLSU-D leads the community's initiatives in sustainable practices that promote caring for our common environmental home. The University's Ecological Solid Waste Management (ESWM) Program under the *Black Out! Green In!* flagship program, utilized a simple, low-cost, and low-technology innovations resulting from the collaboration among the different sectors in the campus and also in partnership with the local environmental groups.

## **2. DLSU-D Ecological Solid Waste Management Program**

### **2.1. Historical Background**

The mission of the De La Salle Philippines (DLSP) schools is to provide a human and Christian education to the young in order to promote peace, justice, and integrity of creation [3]. DLSU-D inculcates the values of stewardship through the Lasallian Mission with the vision of creating professionally competent stewards of God's creation. Since 2013, strengthened campus environment in terms of campus eco-friendly feature, safety and security, is stated in the Goal#4 of the institutional objectives. For the last three years (SY 2016-2019), the Institutional Target Goal# 12 is to develop a culture of environmental sustainability by 1) creating, implementing and educating the community on comprehensive institutional resource plans and monitor results; and 2) targeting adherence to Modern Conduct of School (MCS) principles on Facilities Environmental Programs Management (FEPM) [4].

#### ***Republic Act 9003 (Ecological Solid Waste Management Act of 2000)***

Disposal and management of solid and toxic wastes has been a perennial problem in the Philippines. The passage of the Republic Act 9003 (otherwise known as Ecological Solid Waste Management Act of 2000) which was signed in January 26, 2001, calls for the institutionalization of a national program that will manage the control, transfer, transport, processing, and disposal of the country's municipal solid waste. The major agency tasked to implement this law is the National Solid Waste Management Commission under the Environmental Management Bureau (EMB) of the Department of Environment and Natural Resources (DENR) [5].

In compliance with this Philippine environmental law, DLSU-D Solid Waste Management Scheme follows the Key Step: Segregation at Source for the university's recycling program and promotes zero waste or 'green' lifestyles among the students, employees, and guests of the University. In 2011, DLSU-D was recognized as the Most Sustainable and Eco-friendly School in Tertiary Level category by EMB-DENR.

#### ***Ecological Solid Waste Management Committee (ESWMC)***

The DLSP member schools in Luzon were inspired by the Lasallian values. The ESWM Committee aims to be a community of responsible stewards and educators committed to care and protect the environment for the enhancement of the quality of the present and future generation. The committee member schools are composed of the following: De La

Salle University (DLSU), De La Salle-College of Saint Benilde (DLS-CSB), De La Salle Lipa (DLSL) De La Salle Araneta University (DLSAU), De La Salle-Canlubang (DLSC), De La Salle- Zobel (DLSZ), De La Salle Health Sciences Institute (DLS-HSI) and DLSU-D.

### ***University's Environmental Resource Management Center (ERMaC)***

In 2001, the University's Environmental Resource Management Center (ERMaC) was established in response to the pastoral letter released by the Catholic Bishops Conference of the Philippines (CBCP) on Stewardship of the Earth's Resources. DLSU system has included among others stewardship of God's Creation Ministry Action Plan (MAP) from 1999-2001. ERMaC is under the Office of the Vice Chancellor for Finance and Administrative Services (OVCFAS), that is responsible for the environmental programs and advocacies, aspiring to be an "ecology learning center" both inside and outside the campus.

The following year, the first building of the DLSU-D Ecology Center or Eco Center was inaugurated, in compliance with R.A. 9003. Eco Center functions as the temporary storage of the University's solid wastes and where final segregation is managed. DLSU-D was first among the La Salle schools to establish an Eco Center, thus, has been awarded the Model School-Based MRF by the Provincial Government of Cavite in 2009. It is a self-sustaining system due to income generated from the recyclables in partnership with the service provider. Another part of the engineering aspect in 4Es of the regulatory compliance is the placement of the color-coded trash bins all over the campus. The color-coded set of trash bins include the following: green for recyclable materials; yellow for all kinds of papers; and red for residual wastes. A separate trash bin for food wastes is provided by cafeteria or canteen concessionaires.

Furthermore, a student organization for the environment named Lasallian Vigilance for Environmental Development (LS VERDE), serves as an environmental arm of ERMaC, in voluntary service to promote the beauty and conservation of the environment [6].

### **2.2. Institutional Green Policy Development and Collaborative Partnerships**

The crafting of DLSU-D Environment Policy is our Green Promise to make a greener future which consists of ten (10) objectives focusing on sustainability [7]. Since 2011, the tagline "*Black Out! Green In!*" became the flagship program of the university's response to the impacts of human-induced climate change, presently known as climate emergency. The interpretation of black out, green in tagline is as follows: *black out* refers to carbon emission or worst practices that create negative impact on the environment while *green in* pertains to the best practices in protecting the environment. The main goal is to reduce carbon emission on campus and replacing it with green sustainable habits.

This flagship program is in support of the Lasallian Institute for the Environment's Project Carbon Neutral (LIFE-PCN), a local initiative towards becoming a carbon-neutral university: 1) presents innovative ways to offset the University's carbon footprint and mitigate carbon emission; 2) educates and challenges the DLSU-D community to become involved in the fight against human-induced climate change. PCN assesses the status of DLSP's schools carbon footprint with the goal of achieving a 'green educational network' that is carbon neutral or better. The same flagship program was featured in the 2017 WEF-ISCN Report: Educating for Sustainability. [8]. This tagline was also recognized during the 48th ANVIL Awards by the Public Relations Society of the Philippines; the Merit award is a Public Relations Program on a Sustained Basis Environment/ Sustainable Development.

Recently, the world's scientists have warned against climate emergency by showing scientific evidence on the effects of the global human activities from 1979 up to the present, of the rapid rising greenhouse gas (GHG) emission worldwide [9].

*DLSU-D Ecological Solid Waste Management Program: Green Innovations employing simple, low-cost, and low technology initiatives*

The 'green' innovation on solid waste management that utilized a very simple technology without so many implications with the University's finances is presented in Fig. 1. The Vertical Drip Ecological (VerDE) garden is a modified set-up with four-in-one approach which advocates for urban gardening and food security; segregation-at-source using recycled materials such as plastic bottle and composting using food waste/left-over food; water conservation due to its vertical connecting drip; and lastly, creation of green space (Fig.1a).

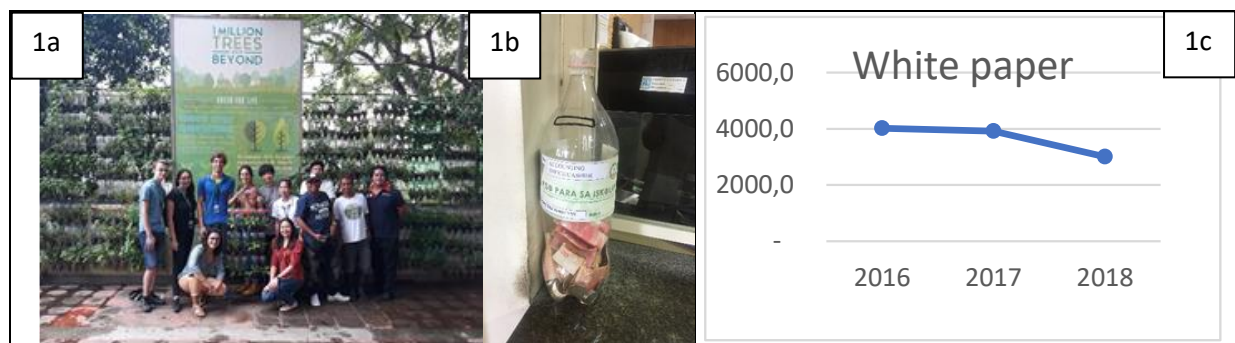


Figure 1. a. A simple, low-cost and low-technology 'green' innovation on waste management: VerDE Garden 4-in-1 approach and ; b. Piso para sa Iskolar (1 peso for the Scholars) using a recyclable material; c. Paper reduction program

VerDE gardening provides environmental awareness workshops to students from other international university partners who intend to study for long-term or short-term periods, undergo internship and on the job training under the Inbound Mobility Program by the University Linkages Office (ULO). It is also endorsed to be an alternative activity for different subjects with environmental advocacies such as environmental awareness, conservation of nature and natural resources and sustainable actions. Indeed, VerDE gardening serves as the demonstration workshop for students and visitors who would like to benchmark on the best practices of our university. The concept of VerDE garden was also adopted in a local community through the environmental project of the Council of Student Organizations (CSO), the umbrella organization of all bona fide student organizations of DLSU-D and this outreach activity was featured in the 2018 WEF-ISCN Report: Educating with Purpose [10].

Correspondingly, segregation-at-source is being practiced when using the plastic bottle as coin bank for raising funds for the poor but deserving Lasallian students (Fig.1b). Furthermore, the scholarship fund-raising campaigns both boost the spirit of Lasallian giving and environmental consciousness. This initiative is coordinated with ERMaC by the University Advancement Office (UAO).

## ***Programs to Reduce the Use of Paper and Plastic in Campus***

### ***CLAYGO Campaigns***

Clean as you go (CLAYGo) is being encouraged at the canteen areas/cafeteria. Claygo is under the ESWM Program to promote 5Rs: refuse, reduce, reuse, recycle, and rethink. Part of which is to encourage all the diners to segregate their used utensils and place in the designated depository area after they finished their meals. This would include the segregation of their food waste/left over food which is being brought and weigh at the Composting Facility prior to drying. The compost (30kgs per sack) is being sold to the community and/ or being used in the gardens such as the VerDE garden and the Botanical garden.

Based on the DENR report (2008-2013) on the typical Municipal Solid Waste composition in the Philippines, 52.31% comprised about biodegradable wastes such as kitchen or food wastes and garden wastes while 27.78% accounted for the recyclables [11].

In the canteen areas, a penalty is imposed on the non-observance of the ESWM policies. A monitoring tool is used to assess their compliance to these policies. In addition, a seminar on ESWM program is conducted regularly for the newly hired staff of the canteen concessionaires.

### ***Paper Reduction Programs***

The automation of the essential documents contributes significantly to the reduction on the use of paper in offices and student activities as shown in Fig.1c: 1) e-payslip system for faculty and staff was developed to meet with the University's thrust to implement paperless transactions and to reduce the volume of the unclaimed payslips at the Accounting Office; 2) Green Meetings memorandum encourages that an e-copy instead of printing hard copies of minutes of the meeting will be sent thru emails of the group; 3) Green Certification for Student Activities aims to inculcate stewardship in their activities and upon submission of AR (Accomplishment Report) thru email, e-Certification will be given; 4) Maximizing the internet technology in processing student activity documents to secure permit for the institution to hold programs will set-aside the usual practice of using application forms such as monitoring form and project proposal forms and submitting only a single copy of attachments than the usual triplicate copies. The automation of documentation for student activities is being initiated by the Office of the Student Services (OSS). In addition, this office spearheaded the Annual Luntiang Parangal (Green Awards for Student Organizations) for the Most Sustainable Student Organization and Most Eco-friendly Project.

SchoolBook is the university's virtual learning environment tool, powered by NEO LMS that enriches learning experiences and strengthens student-teacher and student-student exchange beyond the classroom. The birth of e-learning at DLSU-D started in 2010 without physical office under Educational Technology Center (ETC) and was renamed later to Center for Innovative Learning Programs (CILP). In 2014, DLSU-D ACE online is a degree program which offers students who were not able to finish their college degrees an opportunity to get a degree while working in the Philippines or abroad via fully online delivery. In 2016, the DLSU-D Senior High School adopted a blended class mode using the SB with adoption rate of 100% while 85-90% in college.

### ***No plastic bags and plastic drinking straws policies***

Plastic bags and plastic drinking straws are considered as residual wastes (non-recyclable and nonbiodegradable). The No Plastic bag and plastic drinking straw policies that were implemented in 2011 and 2012 respectively, made a significant reduction in the hauling fee of University's residual wastes. The DLU-D High School has its own version of the ANIMO Zero-waste or the Alternative Ideas and Mechanism on Zero-waste!) in support of the university's environmental advocacy.

The most recent policy, the Green Day policy by Multisectoral representatives hopes to reduce the plastic footprint generated by the University and therefore, eliminate gradually all the single-use plastics such as plastic food boxes, plastic cups and plastic utensils for take-outs or to go as well as all types of plastic packaging. Studies have shown that usage and disposal of plastics posed serious effects on animal, human, and environmental health [12].

### ***E-waste project***

The Project ICON (ICT Contributes to Nature) initiated by the Information Communication Technology Center (ICTC) works in two ways. Students, Faculty and Staff can donate their old or broken e-wastes such as laptop, cellphone and cellphone charger to Project ICON and proceeds of sale are used to purchase seedlings for the tree planting drives in areas identified by ERMaC under the One Million Trees and Beyond (OMTB) Project of De La Salle Philippines.

### ***Other Environmental/Sustainable Projects: Administrative and Collegiate Levels***

The College of Science and Computer Studies (CSCS) ' Waste-no-More and College of Business Administration and Accountancy (CBAA)'s Wishcraft projects, two of the seven colleges in the university which are actively involved in the recycling program both aims to raise funds and raise the level of environmental awareness among its students.

LCDC's bazaar/trade requires all its sellers to strictly observe the No Plastic Bag and plastic drinking straw policies as well as the practice of CLAYGO and the 5Rs: refuse, reduce, reuse, recycle, and rethink. A 5% environmental fee of the total net income from the bazaar goes to the university environment trust fund. The law mandates its citizens to practice 3Rs: reduce, reuse, and recycle in managing the household wastes.

The Office of the Vice Chancellor for Mission, External Affairs and Advancement (VCMEAA) holds an annual search for exemplary Caviteños who have served their people and the province but remain unrecognized. One of the categories is the Natatanging Caviteño sa Larangan ng Kalikasan that seeks to recognize individuals/organizations that promote sustainable practices that lead to the conservation and protection of Cavite's natural resources and heritage.

The University Advancement Office (UAO), which is also under VCMEAA, held the ANIMOSAIC 1: Human recycling logo where Lasalle students gathered to break the record for the largest human formation attempt of a recycling logo. The second attempt, the ANIMOSAIC 3, was cancelled last March 2020 due to COVID-19 pandemic.

On the spiritual aspect, the Campus Ministry Office (CMO) and University Chaplain's Office strongly advocate for the Zero Waste Church by the CBCP thru the use of 'Mess Kits' similar to bring your own tumbler and food utensils. Wear your Faith Mask (customized washable cloth) is one the fundraising projects to help the medical frontliners. Programs for

*Laudato Si'* and Season of Creation are regularly conducted for all the sectors of the university.

Various student organizations projects and activities mainly focused on the environmental awareness, recycling programs, coastal, river and forest clean-up drives, and tree planting activities. Lasallian students are pro-active when it comes to 'greening the environment', partly due to the Service Learning program of the university.

### ***External Partnerships and Collaborative Research***

DLSU-D is a member/partner of the following local and international networks: DLSP's One Million and Beyond Project and Modern Conduct of School- Facilities Environmental Management Program (MCS- FEPM), Cavite Greens and EcoWaste Coalition, Global Catholic Climate Movement Philippines, *Laudato Si'* Generation- Pilipinas , ZeroWaste Recycling Movement of the Philippines Foundation, Inc. (ZWRMPFI) and International Sustainable Campus Network (ISCN).

Through the University Research Office (URO) under the Office of the Assistant Vice Chancellor for Research (AVCR), the University foster partnership with the Provincial Government of Cavite to fully strengthened its Institutional Research Thrusts thru its 50-year Cavite Development Research Program (CDRP) which addresses environmental issues (climate change, water crisis, environmental pollution), entrepreneurship, and corporate social responsibility among others in order to achieve a "Sustainable Cavite". The CDRP was featured in the 2015 ISCN Report on Developing Skills for Future Leaders [13].

External partnerships provide great opportunity for the university to learn, unlearn and relearn in many aspects in exchange for mentorship, trainings, use of facilities to name a few.

### ***Pandemic Framework (COVID-19): 'New Normal' Way***

The crafting of the Pandemic Framework for ESWM Program is as follows: A separate trash bin intended solely for COVID-19-related wastes was provided for the disposal of single-use Personal Protective Equipment (PPEs) such as medical mask and surgical gloves. Regular disinfection using hypochlorite solution is done prior to disposal to the Eco Center following Department of Health (DOH) protocols.

Everyone is encouraged and reminded to wear mask (preferably washable cloth) and face shield, follow social distancing, and frequent hand washing as well as to work together to halt the transmission of the Coronavirus.

Moreover, the University has shifted to fully online classes for the Academic Year 2020-2021 thru Caring for What Matters: DLSU-D Humanized Distance Education Setting as well as the DLSU-D High School with its ANIMO Strategy [14, 15]. Connectivity WiFi devices were also provided for free for all Freshmen. Printed modules copy is only an option for those students who do not have stable internet connectivity in their current areas/location since community quarantine is still implemented in the Philippines. All meetings are done online and there are regular webinar trainings for faculty and staff. Telecommuting or flexible Work from Home (WFH) arrangement is also an option under certain conditions for some employees. In response to the new normal, different online modalities were explored for the continuous operation of the University's transactions [16].

### 3. Summary/ Concluding Remarks

As the whole world is adapting to the new normal due to COVID-19 pandemic and so as DLSU-D. Despite of this, our University still upholds its Lasallian Core Values: faith in God, zeal for service, and communion in mission which can be translated into teaching minds, touching hearts, and transforming lives in a new pandemic way. The University's institutional goals still continue to be responsive and resilient in order to achieve an overall sustainability in strengthening the campus environmental goals in terms of safety, security, and eco-friendly features.

A simple, low-cost, and low-technology utilization for its Ecological Solid Waste Management Program can be manifested through adopting greener lifestyles as well as cascading its sustainable practices and policies to the partner communities. Our ESWM program has been aligned/re-aligned with the target goals of the United Nations Sustainable Development Goals (UN SDGs). DLSU-D is taking simple but doable 'green' actions in heeding the call on global ecological conversion.

In summary, the sustainability of our ESWM program could be attributed to collaborative works among the multisectoral level of the university and partnerships between the local groups sharing common goals and environmental actions.

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