

ENHANCEMENT OF PROFESSIONAL EDUCATION IN SOLID WASTE MANAGEMENT IN THE PHILIPPINES

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ABSTRACT. The enhancement of professional education in SWM was through the offering of a 1-year post-baccalaureate degree Diploma in Environmental Resource Management and Technologies major in Solid Waste Management. It officially started in June 2012 with 25 enrollees in the first semester under Certificate in Environmental Planning and Socio-Economics; 18 of whom are SWM focal persons of different LGUs in Western Visayas and 7 are from other government offices or private sector. Enrolment in the Second Semester offering of Certificate in Environmental Management and Technology, which officially started in November 2012, increased to 28 students (18 LGUs/10 others). The classroom approach became a suited venue for intense interaction between students together with guest lecturers on SWM-related topics. The positive reception of the program, therefore, ensures a permanent venue for developing the capabilities of existing and future SWM practitioners by a qualified institution in the province and neighbouring regions.

Keywords: *Environmental education, graduate course, solid waste management*

Introduction

The signing of Republic Act (RA) 9003 or the Ecological Solid Waste Management Act of 2000 was considered then as a timely solution to the emerging garbage problems in the Philippines. This law promotes an integrated approach to solid waste management (SWM) and sets out ambitious goals. Furthermore it requires the local government units (LGUs) to establish an ecological solid waste management program within their jurisdiction. Few implications of the law are a diversion of 25% of solid wastes by LGUs from waste disposal facilities through re-use, recycling and composting by the year 2006; establishment of a materials recovery facility (MRF) in every barangay or cluster of barangays; and the mandatory waste segregation and recycling at barangay level [1]. Barangays are settlements or urban districts that also represent the smallest administrative and political units in the Philippines.

After more than 10 years of implementation of RA 9003, the overall compliance with this law by local government units (LGUs) still remains low. Many of the problems associated with it can be linked to a combination of local policy priorities and resource issues as well as limited know-how about solid waste management (SWM) of the personnel in charge. Furthermore, there is still little awareness on the importance of sound environmental management within the majority of the population as well as local decision makers and opportunities for institutionalized professional education in integrated waste management systems are lacking.

With the political system in the Philippines requiring local elections every three years, the leaders elected usually have bare knowledge on the intricacies of waste management techniques making them rely on their SWM focal persons for actual implementation. These personnel, on the other hand, whether existing or newly appointed, often do not have formal education on SWM. Often they perform their duties based on existing local programs and obtain new information on selected aspects through attendance of any available seminars and conferences. What is normally offered to them is training that spans usually for two to three days. This short period of time is not enough to provide all the necessary knowledge they need to properly implement the SWM program in their respective areas.

The effective implementation of RA 9003, therefore, requires a very strong commitment from all sectors. As household waste is within the purview of local authorities, LGUs should increase their understanding on the extent of local solid waste problems, and options to improve their solid waste management systems. One of these options is to educate or increase the know how of staff/personnel of LGUs involved in solid waste management.

To answer this concern, an academic Diploma program to enhance Solid Waste Management Education was proposed as an aid to helping the LGUs in Iloilo and nearby provinces including agencies and sectors concerned by empowering their personnel for proper and better implementation of solid waste management and related programs. This is in collaboration with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. The offering of this course is also in support to RA 9512 or the Environmental Awareness and Education Act, which was signed into law in 2008. This law requires relevant government agencies such as Commission on Higher Education (CHED) to integrate environmental education in school curricula at all levels, whether public or private, including in barangay daycare, preschool, non-formal, technical, vocational, professional level, indigenous learning and out-of-school youth courses or programs covering various issues such as, but not limited to, waste minimization, segregation, recycling and composting [2].

Material and Methods

The development of the curriculum started when the AHT Group AG on behalf of (GIZ) together with the Environmental Management Bureau (EMB) implemented the Solid Waste Management for Local Government Units (SWM4LGUs) Project. One of the aims of this project was to assist selected LGUs to implement integrated SWM systems proficiently and economically in all its aspects. Recognizing the need for standardized instructional materials on SWM, the SWM4LGUs Project compiled and piloted eighteen training modules encompassing the fundamental elements of implementing an integrated SWM system.

The modules featured theoretical and applied concepts in waste management and engineering, including case studies from partner LGUs in the Philippines, other developing countries, ut also developed countries as Germany. The collaborative work led GIZ to officially handover the modules to CPU in July 2011 for modification into an instructional material for professional education. GIZ did not only provide the University with inputs in terms of teaching/lecture materials; they also linked the University to selected LGUs that had been assisted by their technical experts.

Table 1 presents the title of the eighteen modules that became the basis of major subjects for the Diploma in Environmental Resource Management and Technologies (ERMAT) major in Solid Waste Management [3].

Table 1. Eighteen modules used for the development of the ERMAT Curriculum.

Part 1	Part 2	Part 3
1. Principles of SWM	6. Informal Waste Sector	11. SLF ⁴ Site Selection
2. SWM Planning	Integration and PPP ¹	12. SLF Design, Planning & EIA ⁵
3. Segregation & Collection	7. MBT ²	Process
4. Materials Recovery & Recycling	8. Dumpsite Closure & Rehabilitation	13. SLF Construction
5. Composting & Biodegradables Management	9. Social Marketing, IEC ³ & Knowledge Management	14. SLF Operation
	10. SWM Financing & Cost Recovery	15. SLF Monitoring
		16. SWM and Climate Change
		17. E-Waste Management
		18. Landfill Gas Management

1 – PPP – Private-Public Partnership

2 – MBT – Mechanical Biological Treatment

3 – IEC – Information-Education Campaign

4 – SLF – Sanitary Landfill

5 – EIA – Environmental Impact Assessment

Results and Discussion

ERMAT Curriculum

The eighteen modules developed for the project SWM4LGUs were modified and improved in order to fit the academic set-up offered by ERMAT. From these, two Certificates with 3 subjects per certificate were created (Table 2). After completion of two Certificates, the student is allowed to enroll an additional 3 units for Project Study on any related topic the student would want to choose to complete the Diploma Course. The Project Study should support the students workplace at the LGU if applicable. In this case the LGU would have a direct benefit of enrolling their SWM focal person in ERMAT and the knowledge and skills of the graduates would be applied in close cooperation with CPU benefitting the community and environment. The course has a total credit of 21 units.

Table 2. ERMAT Curriculum.

	CERTIFICATE IN ENVIRONMENTAL PLANNING & SOCIO-ECONOMICS
1st Semester	Environmental Principles and Legal Framework Environmental Socio-Economics Environmental Management Planning and Project Management
	CERTIFICATE IN ENVIRONMENTAL MANAGEMENT & TECHNOLOGY
2nd Semester	Environmental Principles and Resource Management Concepts Waste Collection, Processing and Monitoring Sanitary Landfill Technology
Summer	Project Study

ERMAT Enrolment

The diploma offering officially started in June 2012 with 25 students enrolled in the first semester under Certificate in Environmental Planning and Socio-Economics; of these, 18 are SWM focal persons of different LGUs in Western Visayas and 7 are from other government offices/private sectors. Enrolment in the second semester offering of Certificate in Environmental Management and Technology, which officially started in November 2012, had in turn increased to 28 students (18 LGUs/10 others). The classroom approach became a good venue for more interaction between students together with the guest lecturers regarding SWM-related concerns of their LGUs and offices.

Table 3. ERMAT Enrolment.

Semester	From SWM Offices/LGUs	From Government/Private Offices	Total
First	18	7	25
Second	18	10	28

Implication of the Offering of the Diploma Course

Education should be the first step in promoting 3R (reduce, reuse and recycle) as a means of tackling waste generation and resource consumption issues [4]. The 3Rs, of course, as in any SWM system, are considered the most preferred options after waste minimization [5]. With the offering of ERMAT, the need for higher education to promote SWM and 3R in a structured and directed manner is addressed. The offering supports or answers the needs identified by selected respondents in selected Asian developing countries that mentioned education, training and capacity building as needs for effective implementation of SWM. The result of the survey which requested for capability-building would include professional SWM training and offering of diploma/certificate courses on SWM [4].

The need for a course specializing on SWM has gradually been answered, at least on this side of the country. This offering will ensure that there will be a permanent venue for developing the capacities of existing and future SWM practitioners by a qualified institution. Having been granted a “full autonomy status” by the Philippines’ CHED, CPU can offer courses and confer academic degrees, which are acknowledged all over the country [6].

Conclusions

With ERMAT course, the qualification of SWM personnel as well as staff from other concerned sectors will always be available amidst political transitions. Knowledge management products such as course modules will have a better opportunity to be continuously peer-reviewed and updated by University faculty and researchers. In the long run, lessons learned from this pilot undertaking could influence government policies in identifying manpower requirements in emerging fields as mandated by new laws and institutionalize schemes to meet the demand for such competencies. The knowledge and skills learned from the training and academic programs will be used in their respective communities and LGUs leading to better implementation of solid waste management program.

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