



UNIVERSITI PUTRA MALAYSIA

**INTEGRATION OF ENVIRONMENTAL EDUCATION FOR
SUSTAINABLE AGRICULTURE: STATUS IN TERTIARY
INSTITUTIONS AND GUIDELINES FOR INSTITUTIONAL
POLICIES AND CURRICULUM MANAGEMENT**

DINA S. DE LA C RUZ

FPP 2000 2

**INTEGRATION OF ENVIRONMENTAL EDUCATION FOR SUSTAINABLE
AGRICULTURE: STATUS IN TERTIARY INSTITUTIONS AND
GUIDELINES FOR INSTITUTIONAL
POLICIES AND CURRICULUM
MANAGEMENT**

By

DINA S. DE LA CRUZ

**Thesis Submitted in Fulfilment of the Requirements for the
Degree of Doctor of Philosophy in the Faculty of
Educational Studies
Universiti Putra Malaysia**

January 2000



***TO JESUS CHRIST, POWERFUL ALMIGHTY GOD,
WITH ALL HIS EVERLASTING GUIDANCE,
PROTECTION AND BLESSING
I PRAISE YOU LORD !***

and

***TO NANAY and TATAY
my departed parents***

whose dreams now turned into a reality

This piece of work is wholeheartedly dedicated.

Abstract of thesis submitted to the Senate of Universiti Putra Malaysia in fulfilment of the requirements for the degree of Doctor of Philosophy.

**INTEGRATION OF ENVIRONMENTAL EDUCATION FOR SUSTAINABLE
AGRICULTURE : STATUS IN TERTIARY INSTITUTIONS
AND GUIDELINES FOR INSTITUTIONAL POLICIES
AND CURRICULUM MANAGEMENT**

By

DINA S. DE LA CRUZ

January 2000

Chairperson: Associate Professor Gan Siowck Lee, Ed. D.

Faculty : Institute for Distance Education and Learning (IDEAL)

The study aimed to: 1) ascertain the current status of environmental education (EE) for sustainable agriculture (SA) in 12 selected tertiary institutions in Luzon, Philippines, and 2) develop a set of guidelines for institutional policies and curriculum management for the integration of EE into the curriculum for SA.

A questionnaire-guided interview of 27 educational administrators and 54 curriculum planners from the institutions was conducted for data collection. Data were analyzed by frequency counts, percentages, means and standard deviations.

The status of the integration of EE into the curriculum for SA was rated by respondents as “medium” level. Tertiary institutions offered EE and SA as separate courses in their curricula and more EE courses were offered than SA courses.



Respondents agreed to support the implementation of a clearly defined policy for the integration of EE into the curriculum for SA. All (12) tertiary institutions have good number of qualified and available teaching staff. Teaching materials were available for appropriate teaching processes, although these must be further improved in terms of quantity and quality.

Based on the data obtained from the survey, as well as literature review related to EE and SA, a set of guidelines for effective policy implementations was formulated. Three basic sequential considerations were identified, namely: (1) institutional diagnosis of plans and planning, (2) institutional development of strategies and programs of action, and (3) the ripple model of institutional policymaking. Parameters of importance were also identified and included to serve as guidelines for curriculum management. These were: development and enrichment of the curriculum, plans of actions, provision of facilities, establishment of linkages and monitoring and evaluation. To resolve the question of implementation, pointers were also included to guide tertiary institutions in selecting and adopting a suitable curriculum model for implementation and specification of content, through the identification of important features of curriculum management, and appropriate administrative approaches for offering EE and SA.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi syarat Ijazah Doktor Falafah.

**PENERAPAN PENDIDIKAN ALAM SEKITAR UNTUK PERTANIAN
MAMPAN: STATUS DI INSTITUTISI PENGAJIAN
TINGGI DAN GARISPANDUAN MERANGKA POLISI
INSTITUSI DAN PENGURUSAN KURIKULUM**

Oleh

DINA S. DE LA CRUZ

Januari 2000

Pengurus: **Profesor Madya Gan Siowck Lee, Ed. D.**

Fakulti: **Institut Pendidikan dan Pembelajaran Jarak Jauh (IDEAL)**

Kajian ini mempunyai dua tujuan: 1) mengetahui status terkini pendidikan alam sekitar untuk pertanian mampan di 12 institusi pengajian tinggi di Luzon, Filipina; dan 2) merangka satu garis panduan mengenai polisi pengurusan kurikulum bagi kegunaan institusi pengajian tersebut menerapkan pendidikan alam sekitar dalam kurikulum pertanian mampan.

Data kajian dikumpulkan secara temubual dari 27 orang pentadbir pendidikan dan 54 orang perancang kurikulum institusi pengajian berkenaan. Penganalisan data kajian dibuat secara bilangan, peratusan, min dan sisihan piawai.

Hasil dari kajian ini mendapati bahawa tahap penerapan pendidikan alam sekitar ke dalam kurikulum pertanian mampan adalah tahap “sederhana”. Juga,

institusi pengajian tinggi tersebut menawarkan ‘pendidikan alam sekitar’ dan ‘pertanian mampan’ sebagai kursus berasingan ke dalam kurikulum yang ada, dan jumlah kursus alam sekitar yang ditawarkan adalah lebih dibandingkan dengan kursus pertanian mampan. Responden kajian bersetuju menyokong pelaksanaan satu polisi yang jelas mengenai penerapan pendidikan alam sekitar ke dalam kurikulum pertanian mampan.

Hasil kajian ini juga menunjukkan bahawa kesemua (12) institusi mempunyai cukup tenaga pengajar yang bersedia terlatih dan untuk mengajar perkara yang dibuat tinjauan itu. Bahan sokongan pengajaran adalah mencukupi. Namun begitu ianya masih memerlukan peningkatan dari segi kualiti dan kuantiti.

Berdasarkan tinjauan literatur dan data kajian ini, beberapa garis panduan telah digubal untuk pelaksanaan dasar yang berkesan. Tiga asas rangkaian pertimbangan telah dikenalpasti : 1) mengenalpasti perancangan program (2) merangka strategi dan pelan tindakan dan (3) menyesuaikan perancangan dengan model “ripple” bagi penggubalan dasar institusi. Beberapa parameter penting telah juga dikenalpasti untuk menjadi garis panduan kepada pengurusan kurikulum. Ini termasuklah: pembangunan dan; pengayaan kurikulum; pelan tindakan; penyediaan kemudahan; pembentukan rangkaian pemantauan dan penilaian. Aspek tumpuan yang khusus juga dikemukakan bagi menjelaskan agar prosidur memilih dan melaksanakan model kurikulum yang dikenalpasti itu dapat mencirikan pengurusan kurikulum yang selaras dengan pendekatan bagi menawarkan konten pendidikan alam sekitar.

ACKNOWLEDGMENTS

The author wishes to express her utmost appreciation and deepest gratitude to the following for their generous support during her graduate studies and in completing this dissertation:

Dr. Gan Siowck Lee, chairperson; Dr. Zaidatol Akmaliah Lope Pihie and Dr. Abdul Main HJ. Salimon, committee members; and Dr. Percy E. Sajise, Director of SEAMEO-SEARCA, for their inspiring and motivating support, valuable guidance, expert advice and constructive criticisms throughout the duration of my graduate study;

The SEAMEO-SEARCA scholarship and the German Academic Exchange Service (DAAD), for her scholarship grant; and the Australian International Development Assistance Bureau (AIDAB) for her valuable experiences as an exchange student at the University of Queensland;

Administrators and mentors at the University of the Philippines Los Baños (UPLB) Chancellor Ruben L. Villareal, Vice Chancellor Josefina R. Licuanan; deans of the UPLB Graduate School - Dr. Dolores A. Ramirez, Dr. Noel G. Mamicpic, Dr. Gil G. Divinagracia, Dr. Ann Inez N. Gironella., Dr. Rita P. Laude, Dr. Erlinda S.



Paterno, Dr. Restituta P. Robles, Dr. Rodrigo B. Badayos and Professor Lilia T. Habacon, - for their unmeasurable assistance and moral support;

Officials and administrators of the Universiti Putra Malaysia (UPM) - Mr. Abdul Aziz Bahsir, Senior Registrar; Dr. Mohd. Ghazali Mohayidin, the new SEAMEO-SEARCA University Coordinator; Dr. Kamis Awang, Dean, Graduate School; Ms. Faridah,, Ms. Khazaila, Ms. Rabidah, and Mr. Rustam, GS Office - for all their support in various officials and personal ways;

Administrators and mentors of the University of Queensland (UQ) - Dr. John Ternouth, SEAMEO-SEARCA University Consortium Coordinator; and Dr. Jeff Sigafos, academic adviser - for their full academic support due to an exchange student;

To helpful people who provided academic, technical and moral support - Dr. Edith Cedicol of SEARCA; GEID staff; UPLB, UQ and UPM Graduate School and Library personnel; Dr. Mariano B. de Ramos for the statistical analysis; Letty, Nel, Loty, and Mr. Francis Dimzon for the computerization; Engr. Danilo Villa, Jr. for various voluntary assistance; and the respondents from 12 tertiary institutions for their cooperation;

To close friends in the Philippines, Elma, Fely, Iris, Yet, Serlie, Sanny ,Ram, Tess and Jun Yee, Erning, Edith, GS-UPLB staff: Mang Adong, Connie, Dory,



Emski, Fando, Jessy, Loty, Lucas, Luz, Perla, Pinky, Mang Romy, and Mang Wally - for their moral support, concern and generous assistance in various ways; to the Filipino community in Australia and Malaysia composed of students and migrant workers, notably Jean Saludades, Sonia and Joselito Somga, Linda A. Lumayag and Too Kia Hong, Ched and Pepe, Ben, Edna, Mau, , Neri, Ago, Eva and Romy, Manny, Hazel and Edward, Alo, Nats, Glo M., En-En, Barbie and Fides, who provided concern and warm friendship away from home;

My family - Ate Zeny and Kuya Dennis, Ricky and Ludy, Toting and Rita, Amym, Denden, Denese, Donie, Renoc, Raven, Rostum, Maria Lorena, Maria Teresa, Cliff and relatives, for their prayers, inspiration and support;

ALMIGHTY GOD, JESUS CHRIST, for being always with me, showering me with amazing myriad blessings; for His plans that are perplexing and grand; and for providing me with everything through His mysterious ways that are beyond compare THANK YOU VERY MUCH



TABLE OF CONTENTS

		Page
DEDICATION.....		ii
ABSTRACT.....		iii
ABSTRAK.....		v
ACKNOWLEDGEMENTS.....		vii
APPROVAL SHEET.....		x
DECLARATION FORM.....		xii
LIST OF TABLES.....		xviii
LIST OF FIGURES.....		xxii
LIST OF APPENDIX TABLES.....		xxiii
LIST OF ABBREVIATIONS.....		xxiv
 CHAPTER		
1	INTRODUCTION	1
	1.1 Purpose of the Study	4
	1.2 Statement of the Problem	4
	1.3 Significance of the Study	6
	1.4 Limitations of the Study.....	8
	1.5 Definition of Terms.....	9
2	LITERATURE REVIEW.....	13
	2.1 Environmental Education	13
	2.2 Status of Environmental Education in the Elementary, Secondary, and Tertiary Levels.....	18
	2.3 Environmental Education in Tertiary Institutions in the Philippines	22
	2.4 Sustainable Agriculture and Sustainable Development	26
	2.5 Efforts to Sustain Agriculture in the Philippines	28
	2.6 Teaching Sustainable Development on Agriculture ...	37
	2.7 Approaches to Teaching Sustainable Development ...	38
	2.8 Problems and Challenges in Teaching Sustainable Development	40
	2.9 Sustainable Development in Agriculture in the Philippines	42
	2.10 Extent of Integration: EE and SA	46
	2.11 Institutional Policies	46
	2.11.1 Policy Formulation	47
	2.11.2 Policy Implementation.....	49
	2.11.3 Policy Evaluation	49

	Page
2.1 Curriculum Management.....	50
2.1.1 Curriculum Planning	50
2.1.2 Curriculum Policy	51
2.1.3 Curriculum Implementation	52
2.1.4 Curriculum Analysis/Evaluation	52
2.2 The Role of Higher Education	54
3 METHODOLOGY	56
3.1 Research Strategy and Conceptual Framework.....	56
3.2 Selection of Sample.....	60
3.3 Research Procedure	61
3.3.1 Instrumentation	61
3.3.2 Curriculum Analysis	62
3.4 Data Collection and Data Analysis.....	64
4 RESULTS AND DISCUSSIONS	66
4.1 Respondents' Background , Information and Views ..	66
4.1.2 Views of Respondents About the Integration of EE into the Curriculum for SA	72
4.1.2.1 Reactions and Reasons by Educational Administrators	72
4.1.2.2 Agreement to Plans of Action by Educational Administrators	73
4.2.2.3 Suggested Focus in the Curriculum by Curriculum Planners	77
4.2 Integration of EE into the Curriculum for SA in Tertiary Institutions: Extent of Implementation	77
4.3 The Integration of EE into the Curriculum for SA. ...	80
4.1.1 Role of Educational Administrators	80
4.1.2 Role of Curriculum Planners	81
4.4 Integration of EE into the Curriculum for SA: Related Institutional Policies as Perceived by Educational Administrators	83
4.4.1 Reasons for Policy Formulation	84
4.4.2 Year of Policy Formulation	85
4.4.3 Policymaking Process	87
4.4.3.1 Policy Formulation	87
4.4.3.2 People Consulted in Policy Formulation	87
4.4.3.3 Duration of Policy Formulation	88

	Page
4 4 4 Problems Encountered in Policy Formulation	89
4 4 5 Plans for Policy Formulation	90
4 4 6 Manner of Policy Implementation	91
4 4 7 Effects in Formulating a Better and Workable Policy	92
4 4 8 Policy Evaluation	95
4 4 9 Policy Implementation for the Integration of EE into the Curriculum for SA as Perceived by Curriculum Planners	97
4 4 9 1 Policy Implementation	97
4 4 9 2 Translation of Policy into Academic Programs	97
4 4 9 3 Mechanisms	98
4 4 9 4 Ways of Integration	100
4 4 9 5 Problems Encountered	100
4 4 9 6 Reaction to Proposed Plan	103
4 4 9 7 Comments/Suggestions to Effectively and Efficiently Integrate EE for SA	104
4 5 Staff Capabilities for the Integration of EE into the Curriculum for SA	105
4 6 Instructional Materials for the Integration of EE into the Curriculum for SA	107
4 6 1 Materials	107
4 6 2 Methods	108
4 7 Curriculum Management for the Integration of EE into the Curriculum for SA as Perceived by Curriculum Planners	110
4 7 1 Curriculum Decision	110
4 7 2 Composition of Curriculum Committee	110
4 7 3 Consideration in Planning Tertiary Curriculum	111
4 7 4 Most Appropriate Approach	112
4 7 5 Evaluation of the Tertiary Curriculum in Agriculture and Environmental Education	114
4 7 6 Ranking of Evaluation Criteria of Tertiary Institutions in Agriculture and Environmental Education	115

	Page
4 8 Curriculum Analysis	116
4 8 1 Degree Program(s) and EE/SA course(s) Offered	117
4 8 2 Local Environmental Issues/Problems and Agricultural Practices	120
4 8 3 Number of EE and SA Course Offered	123
5 Integration of Environmental Education (EE) for Sustainable Agriculture (SA) Guidelines for Institutional Policies and Curriculum Management	125
5 1 The Need for A Prescribed Guidelines for Tertiary Institutions	125
5 2 Guidelines for Institutional Policies	127
5 2 1 Institutional Diagnosis of Plans and Planning	128
5 2 2 Institutional Development of Strategies and Programs of Action	130
5 2 3 Ripple Model of Institutional Policymaking	131
5 3 Guidelines for Curriculum Management	136
5 3 1 Development and Enrichment of Curriculum	137
5 3 2 Plans of Action	138
5 3 3 Provision of Facilities	139
5 3 4 Establishment of Linkages	140
5 3 5 Monitoring and Evaluation	140
5 3 6 A Curriculum Model for Implementation	141
5 3 7 Specification of Content	143
5 3 8 Important Features of Curriculum Management	145
5 3 9 Administrative Approaches for the Integration of EE and SA Courses	153
6 SUMMARY, IMPLICATIONS AND RECOMMENDATIONS	160
6 1 Summary	160
6 2 Implications/Recommendations	168
6 3 Suggestions for Further Research	170
BIBLIOGRAPHY	171

	Page
APPENDIX	
A List of Tertiary Institutions in Luzon, Philippines Involved in the Study	187
B Map of the Study Area	188
C Questionnaire for Educational Administrators	189
D Questionnaire for Curriculum Planners	192
E Interview Guide Educational Administrator (Deans/ Directors/Department Chairmen)	200
F Letter of Introduction	204
G Format for Institution of a Course	205
H The Respondents	206
I The Tertiary Institutions	209
J Requirements for Policy Formulation	217
K EE Curriculum Model	221
L Topics in Agriculture and Environmental Education to be Used in Complementary Course	223
M EE and SA Foundation Courses Offerings in the Tertiary Institutions	224
N Minimum Standard for the Institution of a Course	227
O Proposed Course Analysis	229
VITA	239

LIST OF TABLES

Table		Page
1	Respondents' Background and Demographic Characteristics	67
2a	Trainings/Seminars/Workshops/Conferences Attended by Educational Administrators and Curriculum Planners	70
2b	Frequency of Attendance Educational Administrators and Curriculum Planners in EE and SA Topics	71
3	Reactions and Reasons by Educational Administrators for the Integration of EE into the Curriculum for SA	73
4	Rating of Agreement to Plans of Action by Educational Administrators Related to the Integration of EE into the Curriculum for SA	75
5	Suggested Focus in the Tertiary Curriculum for the Integration of EE for SA By Curriculum Planners	78
6	Curriculum Planners' Assessment of the Degree of Integration of EE into the Curriculum for SA	79
7	Role of Educational Administrators in the Conceptualization for the Integration of EE and SA in Tertiary Curriculum in Agriculture and Environmental Education	81
8	Role of Curriculum Planners in the Curriculum Management to Propose EE for SA	82
9	Institutional Policy in the Integration of EE/SA	83
10	Reason for Policy Formulation and Year of Policy Implementation of EE/SA in Curriculum Programs	86
11	Policymaking Process for the Integration of EE into the Curriculum for SA in Tertiary Institutions	89

	Page
12	Problems Encountered in Policy Formulation By Educational Administrators 90
13	Plans for Formulating and Implementing Policies for the Integration of EE into the Curriculum for SA in Tertiary Institutions 92
14	Effects of Formulating a Better and More Workable Policy 93
15	Policy Implementation for the Integration of Environmental Education into the Curriculum for Sustainable Agriculture..... 94
16	Policy Evaluation for Environmental Education and Sustainable Agriculture Courses 96
17	Policy Implementation/Planning for the Integration of Environmental Education into the Curriculum for Sustainable Agriculture by Curriculum Planners..... 98
18	Mechanisms and Ways Used by Curriculum Planners to Promote Environmental Education for Sustainable Agriculture in the Tertiary Curriculum in Agriculture/ Environmental Education 99
19	Expected Problems of Curriculum Planners if Environmental Education (EE) for Sustainable Agriculture (SA) in the Curriculum are Integrated 101
20	Curriculum Planners' Reaction to the Proposed Plan for a Policy to Integrate Environmental Education for Sustainable Agriculture in the Curriculum 104
21	Curriculum Planners' Comments/Suggestions to Effectively and Efficiently Manage the Integration of Environmental Education (EE) for Sustainable Agriculture(SA) in the Curriculum 105

	Page
22	Curriculum Planners' Assessment of the Staff Capability for the Integration of Environmental Education into the Curriculum for Sustainable Agriculture..... 106
23	Qualification of Teachers in the Tertiary Institutions Identified Who Can Teach for the Integration of EE into the Curriculum for SA..... 107
24	Instructional Materials Used to Teach Environmental Education and Sustainable Agriculture 108
25	Methods Used to Teach Environmental Education and Sustainable Agriculture..... 109
26	Decision-maker for the Integration of Environmental Education into Curriculum for Sustainable Agriculture... 110
27	Composition of the Curriculum Committee for the Integration of Environmental Education into the Curriculum for Sustainable Agriculture..... 111
28	Consideration of Curriculum Planners in Planning Tertiary Curriculum in Agriculture and Environmental Education ... 112
29	Most Appropriate Approach for the Integration of EE for SA in the Tertiary Curriculum in Agriculture/Environmental Education for Curriculum Planners..... 114
30	Curriculum Planners' Evaluation of Tertiary Curriculum in Agriculture/Environmental Education..... 115
31	Curriculum Planners' Ranking of Criteria that should be Considered in the Evaluation of a Tertiary Curriculum in Agriculture/Environmental Education 116
32	Distribution of Degree Program(s) and Course(s) Offered on EE/SA Among Selected Tertiary Institutions in Luzon, Philippines, One Academic Year (First, Second and Summer, Semesters), 1996-97 119
33	Local Environmental Issues and Problems/Agricultural Practices that are Covered in the Tertiary Curriculum in Agriculture/Environmental Education 122

	Page	
34	Summary of Environmental Education (EE) and Sustainable Agriculture (SA) Courses Offered by Tertiary Institutions (TI) in the Undergraduate and Graduate Levels, First Semester, 1996-97	124
35	EE for SA Curriculum Model	142
36	Administrative Approaches in the Integration of EE or SA	155

LIST OF FIGURES

		Page
1	Conceptual Framework 57
2	Ripple Model of Policymaking 133
3	Curriculum Management of Selected Tertiary Institutions in Luzon, Philippines	. . 147

LIST OF APPENDIX TABLES

		Page
1	Tertiary Schools with Environmental Education Components in Luzon, Philippines	232
2	Average Time Spent Per Topic at the Tertiary Level	233
3	Degree Programs of Selected Tertiary Institutions in Luzon, Philippines Offering Foundation Courses in Environmental Education (EE) and Sustainable Agriculture (SA)	234