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A JOURNAL DEVOTED TO DISCUSSION
AND INVESTIGATION IN THE HUMANITIES AND SCIENCES

SILLIMAN JOURNAL

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IN THIS ISSUE

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Silliman Journal

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Contents

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SILLIMAN JOURNAL

"Anything that is worth doing has been done frequently. Things hitherto undone should be given, I suspect, a wide berth."
Max Beerbohm,
Mainly on the Air (1946)

"Every great action is extreme when it is undertaken. Only after it has been accomplished does it seem possible to those creatures of more common stuff."
Stendahl,
The Red and the Black (1830)

"Each little thing that we do passes into the great machine of life which may grind our virtues to powder and make them worthless, or transform our sins into elements of a new civilization, more marvellous and more splendid than any that has gone before."
Oscar Wilde,
"The Critic as Artist," Intentions (1891)

Editorial Notes

Welcome to the first issue of Silliman Journal for the year 2018. The articles in this issue are a thought-provoking mix of updates in education, business ethics, and science and conservation.

The first article is by biologist Jade Aster T. Badon who, with a research team, studied the effects of anthropogenic land use on the distribution of butterflies in Negros Oriental, Philippines. An important finding is that habitats along rivers and lakes provide the last refuge for some species of butterflies and the author highly recommends that local government executives should participate in initiatives to prevent species loss. In addition, educational institutions should include in their curriculum environmental education in order to increase public awareness on environmental protection and conservation.

This paper is followed by a comprehensive review of the undergraduate psychology practicum program conducted by colleagues in the psychology field. The particular focus in this publication is on best practices in practicum supervision. In the context of undergraduate practicum, supervision consists of relationships or links among the academic supervisor, the supervisee, and

the work setting, and these relationships constitute the complex totality of supervision. Best practices were found associated with the practicum subject itself, the practicum teacher, the academic institution, partner agencies, and relevant government agencies and professional organizations.

Next, high school teacher Brenda Boladola analyses the curriculum issue of memory retention and retrieval in K to 12 teaching and learning, given that retrieval of students' prior knowledge, or memory, as needed to connect to the new lesson of higher complexity is oftentimes a problem encountered by teachers in the implementation of the K to 12 Science curriculum using the spiral progression approach. Brenda states that ensuring a meaningful and lifelong learning experience in the students through authentic performance tasks is important as it is associated with the long-term memory development of the learner that guarantees memory retrieval whenever it is needed. The article offers potential interventions for the teachers, the students, the school principal, the curriculum review committee, and the parents.

Then, Rodelio Subade and colleagues examine specific payment vehicles used in the conservation of endangered species and habitats in Northwest Panay, Philippines. In particular, income was found to significantly affect willingness to pay across two payment vehicles—residence certificate and surcharge on electric bill. Familiarity with endangered species also affected willingness to pay. While the authors found that respondents had a high level of awareness of the importance of endangered species conservation, majority were unwilling or noncommittal in contributing to a conservation fund. Thus, sourcing of conservation funds will have to go beyond local residents.

The final full-length article, entitled "The Long March toward Moral Leadership in Business" is by frequent SJ contributors Fr. Stephan Rothlin and Dennis P. McCann. The paper takes up the challenge in business ethics of how to achieve compliance with a firm's or a profession's or an industry's code of ethics while saying that codes of ethics are necessary but insufficient to achieve ethical integrity. The authors argue that "a change of heart, informed by a convergence of the wisdom traditions represented by Confucian entrepreneurship and Catholic social teaching," provides the more realistic basis for making progress toward moral leadership in business.

NOTES SECTION

The lone contribution to the notes section is a proposal by psychology instructor Gina Lamzon for an enhanced model for the undergraduate psychology practicum program. The basis for this proposal is the comprehensive research conducted by Gina, studying psychology programs across the country, for her dissertation.

ACKNOWLEDGMENTS

I wish to thank all contributors to this issue, reviewers of manuscripts as well as my hardworking editorial staff. Special thanks go to the artist whose work graces this issue's cover, Iris Tirambulo and her oil on canvas piece entitled "Pakaw" (2012). Iris worked for ten years as a medical technologist before pursuing a degree in Fine Arts. Now an alumna of Silliman's College of Performing and Visual Arts, Iris also does acrylic and watercolour, children's furniture, installations, murals, and community art projects.

Indeed, whether we work for publication or research, environmental conservation and concern for the arts and natural habitats, leadership in business, and competence in our teaching, the bottom line appears to be a sense of personal commitment and dedication. "Commitment is an act," Jean-Paul Sartre said, "not a word."

Thus, I hope that the studies published in this issue spur action. I invite you to update us in Silliman Journal on your continuing efforts by contributing manuscripts and research reports. As the physician Zeeshan Ali said: "As a researcher, good deeds and work on a new research idea should not be delayed at all."

Margaret Helen F. Udarbe
Editor

The Effects of Anthropogenic Land Use on the Distribution of Butterflies in Negros Oriental, Philippines

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The importance of distributional records for organisms lies in providing supportive documentation as the backbone for conservation planning. A distributional survey of diurnal butterflies was done in the province of Negros Oriental, Philippines to determine the effects of anthropogenic factors on the presence of butterflies in specific localities. One of the most important findings in the survey is that habitats along rivers and lakes provide the last refuge for some species of butterflies. The habitat heterogeneity caused by anthropogenic factors has resulted in the differences in species community and distribution in 16 areas of Negros Oriental examined during this study. The data that were gathered during the survey can be used for preliminary conservation assessments, especially for those species that were distributed in isolated forest patches.

Keywords: Butterflies, Anthropogenic Land Use, Philippines, Distribution

INTRODUCTION

Negros Island (composed of two provinces: Negros Occidental on the western part of the island and Negros Oriental on the eastern part) is located in the Visayas region (Central Philippines) along with other islands. Negros Oriental has a total human population of 1,231,904 (National Statistics Office, August 1, 2007).

It has a total land area of 5,402.30 km2 with 19 municipalities, 6 cities, and 557 barangays (villages or districts). Negros Island shares similar faunistic assemblages with Panay Island located on the western side of the country (PAWB, 1998). Historically, the Negros–Panay faunal region was one large island during the late Pleistocene (Heaney, 1986). It is also one of the areas in Central Philippines which has been designated as a top priority for conservation efforts (Heaney, 1993).

The Philippines is one of the countries in Southeast Asia that is experiencing high rates of deforestation (Achard et al., 2002). Therefore, it is included as a top priority listing for international conservation. Small islands are among the most significant hotspots for biodiversity conservation because of factors such as the rate of habitat loss (Myers, Mittermeier, Mittermeier, da Fonseca, & Kent, 2000). In 1875, the total forest cover of Negros Island was 77%, but this forest was reduced to 48% by 1949, to 24% by 1970, and to only about 3% (39,000 ha) by 1994 (Heaney & Regalado, 1998).

With the increased rates of anthropogenic factors in the Philippines, especially in Negros Oriental, extirpation and extinction of endemic or rare species remain undetectable because of the lack of a local species database and assessment of the current status of the taxa within the island.

Danielsen and Treadaway (2004) identified 14 priority sites for conservation (based on the occurrence of threatened butterfly species) in the Philippines, including Negros; but there is still a need for more areas to be prioritized. Insects like butterflies exceed other organisms in terms of number of species and abundance. There are 927 butterfly species and 939 subspecies in the Philippines, and more than one-third (377 or 40.7%) of them are endemic to this country (Treadaway & Schroeder, 2012). Most of these butterfly species are found on all of the islands, but because of anthropogenic land use, some of the species have limited ranges.

The specialist and territorial species, and their dispersal abilities, are restrained, and their populations are unstable (Fauvelot, Cleary, & Menken, 2006). It is therefore important to locate the areas with a great number of species of different taxa for priority in conservation efforts (Prendergast, Quinn, Lawton, Eversham, & Gibbons, 1993). With the increasing anthropogenic activity, generalist butterflies would tend to increase their populations while the specialist species will decline; the

stability of butterfly populations also depends on other environmental factors such as altitude, habitat fragmentation, and climatic variations (Kitahara, Sei, & Fujii, 2000).

Southeast Asian forests are one of the greatest areas of biodiversity and endemism in the world (Sodhi, Koh, Brook, & Ng, 2004). Dunn (2005) concluded that many insects would become extinct before documentation of the status of each could be accomplished. Since the Philippines is composed of more than 7000 islands with a wide variety of habitats and ecological features, the country requires a comprehensive biodiversity management plan (Alcala, 2004) based on accurate distributional databases. The study aimed to create a database of butterfly species in Negros Oriental and determine how anthropogenic factors affected their distribution, diversity, and abundance. The main objective of this study was to determine the effects of anthropogenic land use on the distribution of butterflies and including some important factors such as temperature. The diversity and richness were correlated against the HTC (Habitat Type Classification) and the distance to the existing priority site, which is the Cuernos de Negros (Mount Talinis).

MATERIALS AND METHODS

Since there are no available data on the distribution of the butterflies on Negros Oriental, it would be difficult to provide a conservation assessment and management plan without a factual base. Species which are observed to occupy different habitats will behave differently, depending on the landscape of the environment (Gardner et al., 2009). The distributional records of butterflies are very important in assessing the effects of urbanization (Hardy & Dennis, 1999), because they can be used in future assessments and comparative analyses. Slade and Turner (2003) made an inventory of butterfly species in North Negros Forest Reserve located in the northern part of Negros Island, but further comparable studies are lacking.

Hence in the present study, the survey and collection of butterflies were carried out in different types of vegetation and landscape by categorizing each site (points collected) using Habitat Type Classifications (HTCs): (1) forested areas, (2) forest fragments including riverbanks and lakeshores, (3) suburban areas, (4) urban areas, and (5) agricultural plantations. The

16 selected study areas were the following: Dumaguete, Tanjay, Bais, Santa Catalina, Siaton, Zamboanguita, Dauin, Bacong, Sibulan, Amlan, San Jose, Manjuyod, Ayungon, Tayasan, Cuernos de Negros (as a separate area), and Valencia (lower elevation sites since Cuernos de Negros is under its vicinity). Every site (specific location in an area or the points) that was surveyed and collected was recorded using Global Positioning System.

Butterfly species identification was initially done in the field, especially for those species that are protected and endangered based on the IUCN Red List of Threatened Species. The specimens that were collected were brought to the McGuire Center for Lepidoptera and Biodiversity, University of Florida, where they were prepared, labeled, and identified. The publications of Treadaway and Schroeder (2012), d'Abrera (1982, 1984, 1986), de Jong and Treadaway (1993, 2007, 2008), Page and Treadaway (2003), Schroeder and Treadaway (2005), Tsukada et al. (1982, 1985), Takanami and Seki (2001), and Okano and Okano (1988–1989) were used to identify collected specimens.

Field surveys and collections were conducted in Negros Oriental, from May to August 2012. These months represent the transitional period as the annual dry season turns to wet season. The duration of the fieldwork also depended on the accessibility of the sites, availability of transportation, and rain; thus, alternative sites were already planned in advance in case other sites were experiencing rain or other unexpected problems.

Butterflies were caught with nets with a 12-h/2-day sampling in each area, and bait traps (pineapple as the bait) were also used for frugivorous butterflies (three bait traps in random places in every area). The difficult part with bait traps is that some of them got stolen. The 12-h fieldwork was affected by distance and time of arrival to the specific field sites. The municipality of Manjuyod was the only area that was surveyed once because of the incoming weather conditions and the availability of field assistants. The landscape of Manjuyod is similar to Bais since these two areas are dominated by sugarcane plantation.

Specimens observed but not collected were recorded, as were endangered and protected species. The temperature readings were recorded by using the Lascar USB-2 Temperature and Humidity Loggers (Lascar Electronics Inc., PA, USA), which was carried during the survey.

Statistical analyses were done using Microsoft Excel 2013 and R Statistical Software.

RESULTS

Distribution, Dissimilarity Diversity, and Richness

The butterfly distributional records are summarized in Table 1.

Table 1

Presence–Absence data of butterfly species in Negros Oriental. A — Mount Talinis, B — Valencia, C — Sibulan, D — San Jose, E — Amlan, F — Dumaguete, G — Bacong, H — Dauin, I — Zamboanguita, J — Siaton, K — Santa Catalina, L — Tanjay, M — Bais, N — Manjuyod, O — Ayungon, and P — Tayasan.

List of butterfly species recorded during the survey	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Arisbe decolor neozebraica Page 1987				+					+	+						
Arisbe eurypylus gordion Felder & Felder 1864						+										
Chilasa clytia visayensis Okano & Okano 1987				+												
Graphium agamemnon agamemnon Linnaeus 1758		+								+			+			
Graphium sarpedon sarpedon Linnaeus 1758	+	+		+	+						+					
Menelaides polytes ledebouria Eschscholtz 1821		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Menelaides deiphobus rumanzovia Eschscholtz 1821		+	+	+	+	+	+		+	+	+	+	+	+	+	+
Achillides palinurus daedalus Felder & Felder 1861			+							+		+				
Papilio demoleus demoleus Linnaeus 1758			+	+	+	+	+		+	+	+	+	+	+	+	+
Menelaides helenus hystaspes Felder & Felder 1862			+							+						
Troides rhadamantus rhadamantus Lucas 1835		+	+			+				+	+					
Appias phoebe montana Rothschild 1896	+															
Appias olferna peducaea Fruhstorfer 1910			+	+	+	+		+				+	+	+		+
Appias nephele? leytensis? Fruhstorfer 1911		+														

Appias lyncida lepidana Fruhstrofer 1910					+	+	+	+	+	+		+	+	+	+	
Catopsilia pomona pomona Fabricius 1775	+	+		+		+	+	+		+	+		+		+	+
Catopsilia pyranthe pyranthe Linnaeus 1758		+	+	+	+	+	+	+	+	+	+		+	+	+	
Catopsilia scylla asema Staudinger 1885		+		+	+		+		+	+						+
Cepora aspasia rhemia Fruhstofer 1910			+					+								
Cepora boiduvaliana negrosensis Okano & Okano 1991					+											
Delias hyparete luzonensis Felder & Felder 1862	+									+						
Delias henningia henningia Eschscholtz 1821			+				+	+		+						
Eurema alitha jalendra Fruhstorfer 1910		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Eurema hecabe tamiathis Fruhstorfer 1910	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+
Eurema sarilata risa Morishita 1981		+						+				+				
Eurema blanda vallivolans Butler 1883	+	+	+		+		+			+	+			+		
Hebomoia glaucippe boholensis Fruhstorfer 1911						+				+						
Leptosia nina terentia Fruhstorfer 1910		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pareronia boebera arsamota Fruhstorfer 1910		+	+	+	+	+	+	+		+						
Danaus melanippus edmondii Lesson 1837		+								+	+	+	+			
Danaus chrysippus chrysippus Linnaeus 1758			+	+	+	+		+	+	+						+
Cethosia luzonica pariana Semper 1888	+	+	+	+	+	+		+		+	+	+		+	+	
Cethosia biblis insularis Felder & Felder 1861			+			+		+		+						
Charaxes solon lampedo Hübner 1824						+										
Cupha arias arias Felder 1867		+							+	+		+				
Cyrestis maenalis negros Martin 1903	+	+	+	+												
Doleschallia bisaltide philippensis Fruhstorfer 1899										+						
Euploea tulliolus pollita Erichson 1834			+	+	+			+	+	+		+	+	+	+	+

Euploea blossomae corazonae Schroeder 1977	+															
Euploea mulciber kochi Moore 1883		+								+						
Euripus nyctelius sparsus Tsukada 1991		+														
Euthalia lusiada schoenigi Schroeder & Treadaway 1978			+													
Hypolimnas anomala anomala Wallace 1869		+														
Hypolimnas bolina philippensis Butler 1874		+		+	+		+	+	+	+	+	+	+	+	+	+
Hypolimnas misippus Linnaeus 1764				+				+	+			+				+
Ideopsis gaura canlaonii Jumalon 1971	+	+	+													
Ideopsis juventa manillana Moore 1883		+	+	+	+	+		+	+	+	+			+		
Junonia orithya leucasia Fruhstorfer 1912										+	+	+	+	+		
Junonia hedonia ida Cramer 1775	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Junonia atlites atlites Linnaeus 1763			+						+	+						
Junonia almana almanac Linnaeus 1758			+			+			+			+	+	+	+	+
Junonia lemonias janome Tsukada & Kaneko 1985													+	+		
Lasippa illigera hegesias Fruhstorfer 1912	+	+									+					
Lexias panopus ingae Schroeder & Treadaway 1987										+						
Lexias satrapes amlana Jumalon 1970	+		+													
Melanitis leda leda Linnaeus 1758			+						+	+	+			+		
Neptis mindorana ilocana Felder & Felder 1863		+	+	+	+		+	+		+	+					
Pantoporia dama dama Moore 1858											+					
Parantica vitrina oenone Butler 1865	+	+		+												
Parthenos sylvia philippensis Fruhstorfer 1898										+						
Phalanta phalantha phalantha Drury 1773		+		+	+	+		+	+	+		+	+	+	+	
Rhinopalpa polynice panayana Erichson 1834	+		+													

Symbrenthia lilaea semperi Moore 1899	+	+														
Tanaecia lupina howarthi Jumalon 1975	+															
Tirumala limniace orestilla Fruhstorfer 1910				+						+	+		+	+		
Tirumala ishmoides sontinus Fruhstorfer 1911				+						+						
Vindula dejone dejone Erichson 1834					+											
Amathusia phidippus negrosensis Okano & Okano 1986		+			+	+					+					
Faunis phaon carfinia Fruhstorfer 1911	+		+													
Acrophtalmia yamashitai Uémura & Yamaguchi 1982	+	+														
Elymnias sansoni sansoni Jumalon 1975	+	+		+			+	+		+						
Lethe chandica canlaonensis Okano & Okano 1991	+															
Mycalesis tagala mataurus Fruhstorfer 1911	+															
Mycalesis igoleta negrosensis Aoki & Uémura 1982	+	+	+			+	+		+	+	+	+		+	+	+
Mycalesis teatus teatus Fruhstorfer 1911	+	+	+													
Mycalesis mineus philippina Moore 1892							+									
Mycalesis perseus caesonia Wallengren 1860			+							+		+	+	+		
Orsotriaena medus medus Fabricius 1775				+									+	+		
Ptychandra negrosensis Banks, Holloway & Barlow 1976										+						
Ptychandra leucogyne Felder & Felder 1876		+	+													
Ragadia luzonia negrosensis Yamaguchi & Aoki 1982			+													
Ypthima stellera stellera Eschscholtz 1821	+	+	+	+	+	+	+	+		+	+	+	+	+		+
Ypthima sempera sempera Felder & Felder 1863	+	+		+			+	+			+			+		
Zethera musides Semper 1878		+	+		+					+	+	+				
Allotinus fallax negrosensis Schroeder & Treadaway 2000		+		+						+						
Amblypodia narada erichsonii Felder 1865		+														

Catochrysops Strabo luzonensis Tite 1959							+									
Catochrysops panormus exiguus Distant 1886		+								+						
Celarchus hermarchus hermarchus Fruhstorfer 1910		+					+									
Celastrina lavendularis hermesianax Fruhstorfer 1910	+	+														
Chilades mindora Felder & Felder 1865						+		+								
Euchrysops cnejus cnejus Fabricius 1798				+				+		+						
Famegana alsulus Herrich-Schäffer 1869								+								
Freyeria putli gnoma Snellen 1876								+								
Hypolycaena sipylus tharrytas Felder & Felder 1862					+											
Hypolycaena erylus tmolus Felder & Felder 1862													+			
Hypolycaena ithna Hewitson 1869				+												
Jamides cleodus cleodus Felder & Felder 1865			+		+		+		+			+	+	+	+	
Jamides celeno lydanus Fruhstorfer 1910	+	+	+	+			+	+		+						
Jamides alsietus alsietus Fruhstorfer 1915	+							+		+						
Jamides alecto manilana Toxopeus 1930								+			+					
Lampides boeticus Linnaeus 1767		+	+			+	+	+	+			+		+	+	
Logania distanti distanti Semper 1889		+														
Miletus sp.	+	+	+					+								
Miletus drucei drucei Semper 1889								+								
Miletus melanion melanion Felder & Felder 1865		+					+	+								
Nacaduba berenice leei Hsu 1990	+															
Prosotas nora semperi Fruhstorfer 1916										+	+		+			
Rapala manea philippensis Fruhstorfer 1912			+													
Rapala caerulescens Staudinger 1889		+														

Rapala tomokoae takanamii H. Hayashi 1984		+														
Spindasis syama negrita Felder 1862		+														
Tajuria jalajala jalajala Felder 1862			+													
Zizeeria karsandra Moore 1865				+	+	+	+	+					+		+	
Zizina otis oriens Butler 1883		+	+	+	+	+	+	+		+			+	+	+	+
Zizula hylax pygmaea Snellen 1876		+		+	+	+						+	+	+	+	
Aeromachus plumbeola Felder & Felder 1867													+		+	
Aeromachus musca Mabille 1876		+														
Borbo cinnara Wallace 1866		+								+						
Cephrenes acalle chrysozoma Plötz 1883			+									+				
Notocrypta paralysos volux Mabille 1883	+															
Odontoptilum corria De Jong 2006		+														
Prusiana prusias matinus Fruhstorfer 1911		+														
Tagiades japetus titus Plötz 1884									+							
Taractrocera luzonensis luzonensis Staudinger 1889		+				+	+	+				+	+	+	+	
Telicota colon vaja Corbet 1942								+						+		
Telicota ancilla minda Evans 1934						+										
Telicota augias pythias Mabille 1878									+							
Xanthoneura obscurior De Jong & Treadaway 2007	+															

Results in Bray Curtis Dissimilarity tests are summarized in Table 2. Higher percentages mean that both areas are nearly dissimilar in species composition while lower percentages indicate that both areas are similar in species composition. In the case of Negros Oriental, areas located in proximity tend to have lower percentages.

Table 2

Results of Bray Curtis Dissimilarity test in percentage across areas. A — Mount Talinis, B — Valencia, C — Sibulan, D — San Jose, E — Amlan, F — Dumaguete, G — Bacong, H — Dauin, I — Zamboanguita, J — Siaton, K — Santa Catalina, L — Tanjay, M — Bais, N — Manjuyod, and O — Ayungon.

Areas	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Valencia	79%														
Sibulan	76%	67%													
San Jose	88%	54%	57%												
Amlan	89%	67%	51%	47%											
Dumaguete	92%	55%	54%	60%	53%										
Bacong	84%	50%	56%	50%	51%	55%									
Dauin	92%	64%	76%	65%	77%	60%	69%								
Zamboanguita	90%	64%	58%	47%	62%	54%	58%	65%							
Siaton	89%	61%	65%	51%	63%	72%	60%	76%	55%						
Santa Catalina	84%	59%	58%	53%	59%	67%	56%	81%	63%	59%					
Tanjay	90%	68%	64%	58%	56%	59%	70%	77%	63%	72%	56%				
Bais	94%	75%	66%	59%	57%	62%	70%	77%	65%	67%	67%	37%			
Manjuyod	85%	75%	62%	57%	46%	64%	58%	81%	66%	71%	63%	53%	50%		
Ayungon	87%	77%	63%	69%	58%	64%	52%	83%	63%	78%	66%	65%	65%	50%	
Tayasan	91%	78%	58%	65%	61%	63%	60%	86%	62%	77%	66%	67%	67%	58%	53%

Table 3 summarizes the recorded number of species, estimated species richness and Simpson's Reciprocal Index of Diversity (SRI), and the Habitat Type Classification (HTC) for each area.

Table 3

Recorded number of species, Habitat Type Classification, Simpson's Reciprocal Index of Diversity (SRI), and Estimated Species Richness (Bootstrap and Jackknife).

Localities	HTC (Mean)	Num. of Species	SRI	Bootstrap	Jackknife1
Mount Talinis	1.00	33	20.01	61.16	49.78
Valencia	2.32	61	25.22	102.51	90.87
Sibulan	2.52	47	36.05	86.65	68.81
San Jose	3.02	39	19.77	75.23	55.88
Amlan	3.15	31	23.63	60.10	44.85
Dumaguete	3.06	31	10.69	58.91	45.90
Bacong	3.59	31	21.56	58.51	43.88
Dauin	3.05	43	7.61	77.20	57.97

Zamboanguita	3.19	26	13.08	50.73	36.92
Siaton	2.92	54	24.30	99.35	78.87
Santa Catalina	3.15	30	16.91	59.05	41.88
Tanjay	4.28	28	15.21	53.52	34.95
Bais	4.02	33	17.57	62.48	44.92
Manjuyod	3.24	32	30.00	60.05	45.82
Ayungon	3.40	22	20.42	42.27	30.82
Tayasan	2.72	17	9.87	34.00	28.70

For Habitat Type Classification (HTC), 1 — forested, 2 — forest fragments (lakeshores and riverbanks), 3 — suburban, 4 — urban, and 5 — agricultural lands.

There is a significant difference in species richness using Bootstrap and First-Order Jackknife species richness estimators (Bootstrap: X-squared = 81.5005, df = 15, P = 3.71e−11; 95% CL; Jack1: X-squared = 87.2101, df = 15, P = 3.278e−12; 95% CL). Valencia (Bootstrap: 102.51; Jack1: 90.86) has the highest species richness while Tayasan has the lowest (Bootstrap: 34.00; Jack1: 28.70). This is an indication that all 16 areas that were surveyed have different species richness estimates. The reason why Valencia has higher species richness compared with that of Tayasan is that the latter is located distantly from the potential priority site (Cuernos de Negros) and the existing priority site (Mount Canlaon). Valencia is located between Cuernos de Negros and Dumaguete, which makes Valencia act as the corridor between forested areas and urbanized areas and, thus, tend to have a mix of both forest specialist and generalist butterflies.

There is also a significant difference in the species diversity (Table 3) in all areas (X-squared = 43.3083, df = 15, P = 0.000141; 95% CL). Sibulan has the highest in terms of diversity followed by Manjuyod and Valencia. It is expected that Sibulan and Valencia would have the highest diversity because they are closer to Cuernos de Negros and the Balinsasayao Twin Lakes Natural Park (Sibulan). The reason why Manjuyod has higher diversity is because of the number of riparian habitats encountered during the study in the area.

CORRELATION ANALYSIS

Figure 1 is the correlation/regression analysis between numbers of species (NUMSP), Habitat Type Classification (HTC), diversity (DIV), and richness (RICH). The NUMSP is negatively correlated with HTC (−0.30), while positively correlated with DIV and RICH (0.45 and 0.99, respectively). Higher HTC means higher disturbance, which resulted to lower number of species. Higher number of species also means higher species diversity and richness.

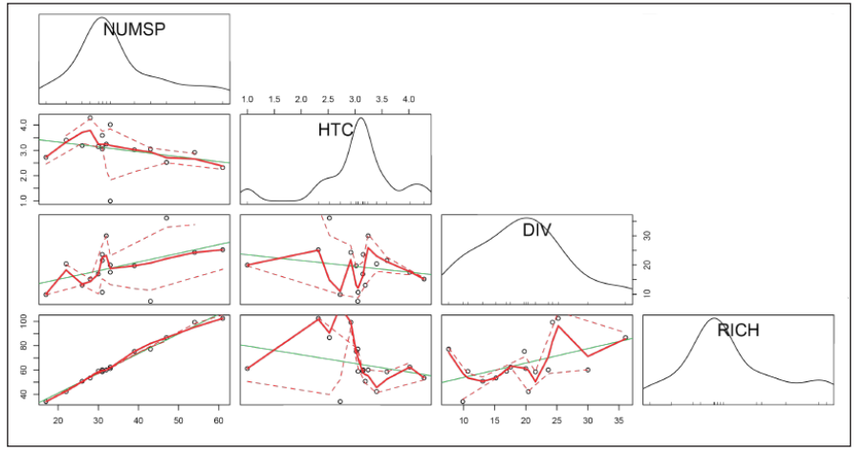

Figure 1. *Correlation analysis between number of species (NUMSP), Habitat Type Classification (HTC), diversity (DIV), and richness (RICH).*

The HTC resulted a negative correlation between DIV and RICH (−0.1924297 and −0.2787387, respectively). Higher disturbances (HTC) caused decline in diversity (DIV) and richness (RICH), while higher species richness generated a higher diversity value.

Figure 2 is the correlation/regression analysis on distance (DIST) from the potential priority site (Cuernos de Negros) against NUMSP, HTC, DIV, and RICH. In this analysis, Cuernos de Negros (or Mount Talinis) will be the factor since this is the potential priority site. The NUMSP is negatively correlated against DIST (−0.6290987), which means that areas that are distant from the potential priority site have lower species number, while those areas that are closer to the potential priority site have higher species number. The diversity (DIV) and richness (RICH) were both negatively

correlated with DIST (−0.1089468 and −0.6470634, respectively), which means that areas that are farther/distant to the existing priority site have lower species diversity and richness values.

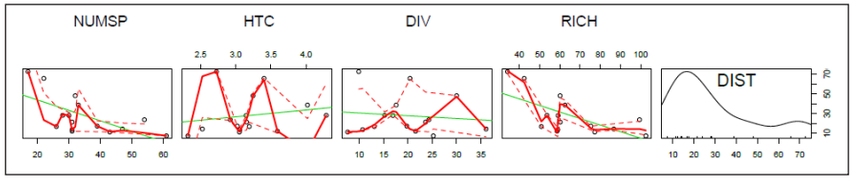

Figure 2. *Correlation analysis on distance from the priority site (DIST) against NUMSP, HTC, DIV, and RICH.*

Habitat Type Classification (HTC) is positively correlated with DIST (0.1779502), which means that areas farther/distant to the priority site have more disturbed habitats (especially agricultural lands and cleared areas).

Butterfly Species Composition

The butterfly species composition in forested areas (including fragment forests along riverbanks and lakeshores) during the survey is completely different from that in the urbanized areas and in the agricultural lands. The species present in the remaining forested areas and fragmented forest riverbanks (riparian) in Negros Oriental are candidates for flagship species in butterfly conservation in the province such as the following: Papilionidae: Menelaides helenus, Troides rhadamantus, and Achillides palinurus; Nymphalidae: Parthenos sylvia, Euploea tulliolus, Euploea mulciber, Danaus melanippus, Ideopsis gaura, Lexias satrapes, Lexias panopus, Faunis phaon, Zethera musides, Acrophtalmia yamashitai, Tirumala limniace, and Tirumala orestilla; and Pieridae: Delias henningia, Delias hyparete, and Appias phoebe (only found in Mount Talinis and Mount Canlaon in Negros Island).

For Lycaenidae and Hesperiidae species, further assessment is required since most of them were only recorded in few areas except for some Lycaenidae species such as Zizina otis, Zizula hylax, Lampides boeticus, and Zizeeria karsandra. For Hesperiidae species, only the Taractrocera luzonensis was recorded in many areas while the other species have limited distribution.

The abovementioned butterfly species found during the survey have limited distribution, and some of them are in isolated fragmented habitats in Negros Oriental. These are candidates for further investigation on their population biology to determine if they are stable or unstable in occurrence.

DISCUSSION

Assessment of specific localities of butterflies during the survey is necessary for preliminary conservation efforts, especially in the case of those species that are isolated and at risk of further habitat loss.

The result of the study on species dissimilarity showed that Cuernos de Negros is the most dissimilar in species composition when compared to other areas, while Valencia and Sibulan showed lower dissimilarity values. Both of these areas are closer to Cuernos de Negros, and Sibulan includes the Balinsasayao Twin Lakes Natural Park, which connects with Mount Talinis. Areas that are distant to Cuernos de Negros (potential priority site) have lower species numbers coupled with higher disturbance level compared with areas that are closer to Cuernos de Negros.

The differences in species diversity across all areas depend on the size of the area being studied (Hardy & Dennis, 1999).

In this study, we omitted the size of the area, which could affect our results. Larger areas mean that more habitat types can be surveyed.

Species richness can be higher in some areas because of historical factors (Ricklefs, Latham, & Qian, 1999). These areas have been preserved for long periods of time with less disturbance and change in their ecological landscape. The vegetation surrounding rivers and lakes (Lakes Balanan and Balinsasayao) and the remaining primary and secondary forests in Negros Oriental have been preserved for many years, and that is why these areas currently contain few special butterfly species, but they are at risk from crop plantation expansion and deforestation. The forested areas in Negros Oriental contain more butterfly species compared with disturbed habitats, and further protection is needed to prevent extirpation.

The survey in Negros Oriental recorded 31 (23.84%) out of 130 butterfly species that are endemic to the Philippines to the subspecies level, while a total of 16 (12.30%) are endemic to the species level. Most of these endemic taxa are found in the forested area of Cuernos de Negros, forest edges of Valencia, Lake Balinsasayao Twin Lakes Natural Park, and Lake Balanan.

The authorities of Lake Balanan in Siaton should consider prioritizing the site to be protected and prevent further habitat loss as well as reforesting its surroundings. It is interesting that some endemic species found at Lake Balinsasayao were not recorded at Lake Balanan, and the latter also has endemic species that are absent at Lake Balinsasayao. These two areas should be protected, preferably by declaration as butterfly refuges or sanctuaries.

Survey analyses can determine areas where species are isolated or range restricted (Hurlbert & White, 2005). This general result was observed in some areas of this study where some species of butterflies were found in very isolated habitats especially the remaining forested areas, lakeshores, and riverbanks in Negros Oriental. The study did not have an average number of points per area survey since we only input points where specimen collection was done. The fewer the points recorded, the fewer specimens were collected.

It is very important to study the survival and reproductive rate of butterfly species, especially in fragmented habitats (Hamer, Hill, Lace, & Langan, 1997). The population stability and reproductive rate of these species still requires further research to determine if some species populations are declining.

Small patches of forested area can also play an important role in butterfly conservation because these areas still hold a significant number of butterfly species (Horner-Devine, Daily, Ehrlich, & Boggs, 2003). Additionally, connecting similar forest patches can enhance biodiversity conservation and maintain viable insect populations (Samways, 2007). Generalist species have dominated the urbanized areas while those that tend to show small home ranges remained isolated. This observation was also similar to the results derived by Cleary et al. (2009) in their studies on Bornean butterflies. Even the presence–absence data for individual insect species are significant for distributional records to use as a basis for conservation initiatives (Miller, 1993).

For the present work, a negative correlation was obtained when butterfly species numbers were correlated with temperatures (Figure 3). The result shows that different geographic locations have varying average temperatures and some butterfly species can have climate preferences. Higher temperature means that the area has more open spaces or less canopy cover, while lower temperature means that this area has sufficient canopy cover (forested). Some organisms are already on the brink of extinction because of changing in climatic conditions (Thomas, Franco, & Hill, 2006).

In the case of Negros Oriental, anthropogenic factors exacerbate the climatic conditions by reducing canopy cover, thus raising air temperatures to levels that are detrimental to some butterflies.

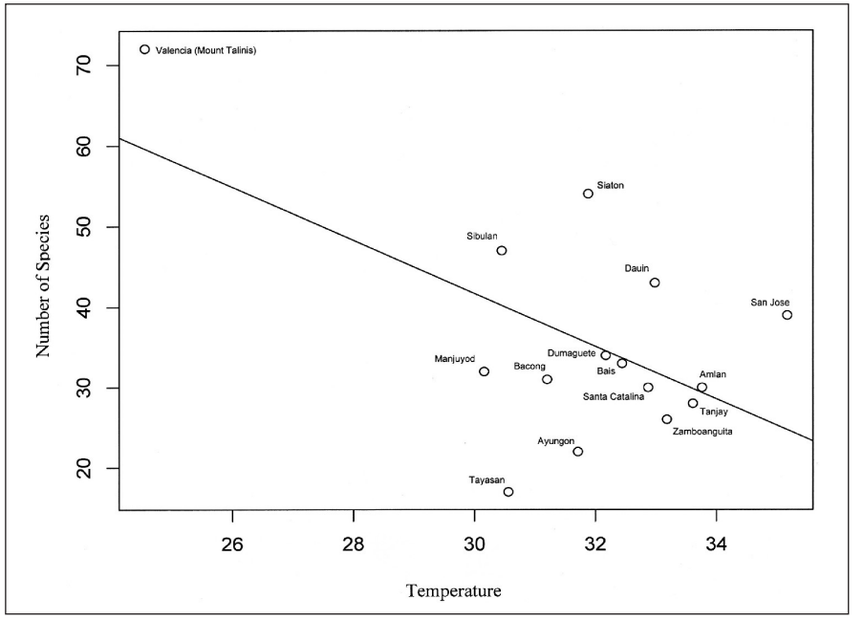

Figure 3. *There is a negative correlation between the numbers of species plotted against the mean temperatures of each area.*

According to Treadaway (pers.comm.), Papilio negrosiana and Deramas sumikat are missing from my list, and these species are probably experiencing population decline or possibly extinct.

Mount Canlaon in the northern part of Negros Island was designated as priority site while Cuernos de Negros (Mount Talinis) was designated as one of the potential priority sites for conservation in the Philippines (Danielsen & Treadaway, 2004). Both areas are also vulnerable to deforestation; therefore, Cuernos de Negros in the southern part of Negros Island should be designated as a priority site. Additional priority sites should also be established in areas distant to these priority sites to prevent further loss in species number in the province.

CONCLUSION

The extent of anthropogenic factors in Negros Oriental has greatly affected the distribution of butterfly species as well as the species richness, diversity, and even the mean temperatures. Areas that are distant from the potential priority area (Cuernos de Negros) tend to have lower species numbers coupled with higher disturbance levels. The remaining fragmented forest habitats and the vegetation surrounding the rivers and lakes provide suitable conditions for specialist/range-restricted species while most of the generalist species dominate the areas with high anthropogenic factors. The canopy cover including nectar sources and hostplants in the understory strata in these remaining fragmented forest areas continue to be excellent habitats to support butterflies.

Sodhi and Posa (2005) found that birds and butterflies were negatively affected by anthropogenic factors in Subic Bay, Luzon, Philippines. Similar results were also obtained by Akite (2008), in which species diversity and richness were found to be negatively affected by anthropogenic factors. Low species richness was observed in areas with high urbanization (Hardy & Dennis, 1999), especially exemplified in areas with wide-area plantation and habitat conversion that resulted in the decline of species numbers. Bonebrake et al. (2010) reviewed the status of tropical butterflies in general and found that habitat loss is the most significant threat to tropical butterfly diversity. There is a need for more priority sites to be established in Negros Oriental to prevent species loss, and this could be done by the participation of the Local Government Units (LGUs) of all the municipalities and cities in the province. From the results I report here, I would recommend that municipality-/city-based conservation initiatives should be promoted and Philippine educational institutions should include environmental education in their new curriculum to increase public awareness on environmental protection and conservation. It is also important that nectaring plants, foodplants/hostplants, and dense vegetation (canopy cover) are well-established for a long period of time to provide adequate time and resources for butterflies to thrive.

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The Undergraduate Psychology Practicum Program: Best Practices in Practicum Supervision

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Margaret Helen U. Alvarez
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This study looked into the undergraduate psychology practicum program as experienced by teachers handling the subject. Twelve practicum teacher-supervisors from major universities across the Philippines were interviewed using a qualitative phenomenological approach. Resulting data included their views and feelings about practicum supervision and the challenges and opportunities found in their work. Best practices were found associated with the practicum subject itself, the practicum teacher, the academic institution, partner agencies, and relevant government agencies and professional organizations.

Keywords: Undergraduate psychology practicum program, practicum supervision, practicum teachers, phenomenological approach, supervisory experiences, best practices

INTRODUCTION

Supervision is an essential factor in the overall learning experience of students engaged in practicum work. The roles and responsibilities of those involved in the various stages of practicum are critical because students' understanding of the link between theory and practice hinges on the expertise and competence of supervisors. Supervision is crucial to developing and enhancing students' self-awareness, competence, and sense of professionalism.

Indeed, the role of supervision in preparing practitioners is so vital that there has been global recognition of its worth and significance (Openshaw, 2012). In fact, unlike a few decades ago when it was closely associated with other fields, clinical supervision is now a recognized field distinct from teaching, counseling, and consultation (Leddick & Bernard, 1980, cited in Ellis, 2010). Evidence of its value and importance are the local and national policies pertaining to professional requirements regulating its practice. Moreover, legal mandates are included in the code of ethics of various international and national professional organizations and regulatory bodies to ensure competent practice among supervisors.

Johnson and Stewart (2000), however, observed that, although supervision is considered as one of the major aspects of professional preparation, it falls short of the set standards. Likewise, as a hallmark of professional training and as an important element in work-study programs, Crespi and Lopez (1999) stated that not much has been written about supervision issues that particularly influence school-based psychology supervisors. Similarly, while literature is replete with studies focusing on the graduate and postgraduate levels (mostly foreign-initiated), only a few center on the undergraduate level where supervision begins.

With the full implementation of the Psychology Act of 2009 (Professional Regulation Commission, 2011), the law professionalizing the practice of psychology, it is vital that students be given the best possible practicum exposure—one that does not only train them to acquire necessary competence but also helps them develop appropriate professional work ethics.

Corollary to the strong focus on professionalization, it is imperative that, as students engage in practicum work, they receive optimum supervision and pertinent work experiences in various settings and learn to be competent and ethical professionals. However, except for the general guidelines specifically on the number of hours and prerequisite subjects provided by the Commission on Higher Education (CHED), there seems to be a lack of standards relative to the specific guidelines among higher education institutions that explicitly outline the various aspects of practicum including supervision, qualifications, roles, and responsibilities; preplacement, placement, and postplacement activities; specific objectives and activities; and policies and requirements. This reality may potentially

leave the practicum supervisor at a loss and the students at a disadvantage. Although some higher education institutions (HEIs) have formulated their own guidelines, there appears to be no consensus as to what constitutes the expected standards. Thus, there is a need to address issues and concerns relative to supervision of practicum students in the undergraduate level so that a more appropriate and relevant guide can be institutionalized and competent practice ensured.

In the context of undergraduate practicum, supervision consists of relationships or links among the academic supervisor, the supervisee, and the work setting, and these relationships constitute the complex totality of supervision. According to Hays and Clements (2011), together, the workplace supervisor, the academic supervisor, and the student form a learning triad. In Lamzon's (2015) study, the focus was on the practicum supervisor based in an academic institution.

REVIEW OF RELATED LITERATURE

As specified in RA 10029, the practice of psychology includes psychological intervention, assessment, and programs of which clinical supervision is included. Clinical supervision is defined as "the direction, guidance, mentoring, and cliniquing of psychology practitioners and interns, psychometricians, and other trainees for psychology-related work to meet the standards of quality and excellence in professional practice." Powel and Brodsky (2004) defined clinical supervision as "a disciplined, tutorial process wherein principles are transformed into practical skills, with four overlapping foci: administrative, evaluative, clinical, and supportive." In this definition, administrative supervision stresses observance of organizational and procedural aspects of an agency; evaluation mechanisms are also employed to realize gains obtained from the experience.

It is clear that the supervisor has the expertise to supervise and that he/she intervenes to improve the supervisee's performance. Clinical supervision is anchored on a relationship characterized by respect and a clear understanding of one's expectations, role, and accountability. Haynes, Corey, and Moulton (2003) articulated that clinical supervision aims "to create a context in which the supervisee can acquire the experience needed to become an independent professional," adding that supervision is "artful,

but it's an emerging formal arrangement with specific expectations, roles, responsibilities, and skills." Clearly, the focus of clinical supervision is on honing one's effectiveness through affirmative changes in knowledge, attitudes, and skills.

Hays and Clements (2011) add that supervision is the guidance and support students need while on placement to ensure that the learning experience is optimized and that they have the overall most positive experience possible. Page and Wosket (cited in Hawkins & Shohet, 2007) stated that good supervision should allow for a two-way flow in which both supervisor and supervisee are responsive to each other's input. Supervision, therefore, becomes a dynamic learning and developmental process in which both parties learn and grow together.

As a complex transaction between supervisor and supervisee, supervisory models have been developed to provide a framework that serves as a guide for clinical supervisors (Smith, 2009). Bernard (1992, cited in Smith, 2009) said that models are important because they methodically address "a safe supervisory relationship, task directed structure, methods addressing a variety of learning styles, multiple supervisory roles, and communication on skills enhancing listening, analyzing, and elaboration," adding that one's personal model of supervision keeps on improving and changing as one profits from experience and forms insight.

Although there is a general consensus in the literature that a model of clinical supervision is extremely indispensable for quality supervision and one's practice should be anchored on it, Cochrane, Salyers, and Ding (2010) reported that supervisors generally do not have adequate knowledge about supervision models. Although almost half of the respondents surveyed claimed they had a framework for supervision processes, only very few were able to describe an evidence-based model when asked to explain. Nonetheless, they claimed they had the competence to supervise. Villar (2008) had noted that, among counselor practitioners, a number do not have a clear theoretical orientation in their practice, later citing the study of Sexto and colleagues showing that theoretical orientation is not a key element factor in counseling outcomes (Villar, 2012).

Falender and others (2004) proposed supervision as a core competency in psychology and presented a competencies framework composed of specific elements exemplifying knowledge, skills, values, and meta-knowledge. All

competencies have to be emphasized to guarantee sufficient training and professional development. In addition to the core competencies, Falender et al. (2004) proposed the inclusion of supraordinate factors of supervision pervasive in all facets of professional development and that take into account the idea that professional development is a lifelong, cumulative process necessitating emphasis on diversity along with legal and ethical issues.

Ellis (2010) observed that, in the absence of frameworks and provisions of support that link theory and practice in university work-related programs, most academic supervisors are not disposed or fail to deliver what students need in the various phases or activities of practicum work. Ellis and colleagues (2013) confirmed in their study on the incidence of inadequate and harmful supervision that 93% of the supervisees assessed received inadequate supervision and 35.3% experienced harmful supervision. The authors clarified and emphasized that harmful supervision was different from, but part of, inadequate supervision.

Certainly, competence to provide supervision requires adequate and formal training (Harvey & Struzziero, 2008), but as Falender et al. (2004) noted, despite the fact that it is an important field of specialization among psychologists, formal training and standards have generally been underemphasized. The study conducted by Cochrane and colleagues (2010) confirmed that most intern supervisors lacked formal training in supervision and that they were not given appropriate orientation from their respective academic institutions for functioning as supervisors. Moreover, in a national survey conducted by Johnson and Stewart (2000) among Canadian psychologists who served as clinical supervisors in academic or service settings, about two-thirds of the respondents had no formal training in supervision and therefore felt inadequate to supervise. The studies of Mateo (2010) and Laud (2013) also pointed out that supervision practices are far from ideal.

Deal and Clements (2006, cited in Hays & Clements, 2011) reported that students supervised by trained field instructors were significantly more satisfied than those by untrained field instructors particularly in the following areas: supporting their work at the work settings, providing specific feedback about their performance, utilizing theoretical concepts when discussing cases or situations, and explaining the reasons why a particular intervention used by the supervisee was effective or not. Furthermore, Cochrane et al.

(2010) said that most interns are supervised by underqualified supervisors whose training does not include formal coursework in supervision. Similarly, Harvey and Struzziero (2008) and Bernard and Goodyear (2009) also stated that, without adequate knowledge and skills acquired through formal coursework and training, deciding which model to use in a particular supervisory relationship would be tough.

Supervision among practicum students in the undergraduate level comes from both the academic or placement supervisor who is school-based and the on-site supervisor who represents the host or partner institution. In this study, practicum supervisors or practicum teachers refer to supervisors who are based in the academic setting and who take charge of the placement of practicum students in different work settings. Coll and Eames (cited in Hays & Clements, 2011) affirm the pivotal role of placement supervisors in learning programs, stressing that the role of the academic supervisor is important in encouraging active involvement and in increasing satisfaction in practicum work. However, Smith (2010) has indicated that therapists or counselors are not necessarily good supervisors, stating that a "'master' clinician may not always be a 'master' supervisor without the addition of training and competency in supervisory knowledge and skills."

In providing supervision among practicum students and interns, supervisors employ a variety of strategies and tools. As revealed in the study of Cochrane et al. (2010), supervisors typically used case consultations, live supervision (direct observation), intern self-report, and model as modes in supervising interns. The least frequently used are role play, audio tapes, and video tapes. Of these methods, Bernard and Goodyear (2009) had earlier found intern self-report about the client and case least effective. Yet, many are still utilizing it.

Aside from observing the institution's directive on student safety and general welfare, Hays and Clements (2011) characterized what the supervisory relationship should be, where the supervisor fulfills various roles including teacher, counselor, mediator, consultant, and diplomat, and must often work with managers and human resources staff in host facilities to create effective learning environments for students. The academic supervisor is responsible for assessing student learning associated with the placement and may collaborate with the workplace supervisor to balance assessment of work performance and learning; he/she may also have to work together with

course conveners or other faculty members and workplace supervisors to ensure alignment between curriculum and workplace requirements.

Indeed, practicum in the undergraduate level closely resembles cooperative education which, according to Coll and Eames (2000), brings about three models for the role of placement coordinators including a simple administrative role, as part of a centralized unit of coordinators whose functions are still mainly administrative and another that consists of dual roles as placement coordinators and teaching faculty with their specialty areas. In a simple administrative role model, the supervisor's main function is to provide a list of prospective employers to students, and interaction with employers, students, and faculty is minimal. The second model involves a centralized cluster of coordinators who are separate from the faculty and have more contact with employers but are rarely specialists in the discipline. In the third model, coordinators are specialists in their discipline and have strong interaction with students, faculty, and employer. As such, they are knowledgeable about the trade of the employer. The third model appears to be the most common practice in the local context. Most practicum supervisors are specialists in their field and typically hold dual if not multiple positions. Aside from being full-time faculty, they are also assigned other roles.

Meantime, the professional standards of the various professional organizations of the helping professions dictate that psychologists should only provide services for which they have been trained; this includes supervision. Republic Act 10029 regulates psychology practice in the Philippines. Recognizing the importance of the role of psychologists in nation-building and development, the law ensures that practitioners meet the necessary qualifications and standards to provide excellent and globally competitive services. Essentially, the law was enacted to protect the safety and general welfare of service users. Under the term "other psychological intervention programs," clinical supervision is included, along with addiction rehabilitation and treatment programs, behavioral management and intervention programs in correctional facilities, psychological training programs, and mental health programs in disaster and emergency situations.

The CHED Memo No. 38 (s. 2010) specifically defines the standards and policies of undergraduate psychology programs to ensure that HEIs offering such programs adhere to the set standards. Specifically, the memorandum states that the undergraduate psychology programs "prepare students for

jobs that may involve training, testing, and research and professions such as medicine, law, and business management." As graduates, they may follow career tracks in the helping profession, education, business, and government organizations and civil society.

ANALYTICAL FRAMEWORK

Unlike in quantitative studies where variables are predetermined and their relationships described through conceptual or theoretical frameworks, Lamzon's (2015) study made use of an analytical framework because of its qualitative phenomenological nature. As an emergent design, Creswell (2008) indicated that qualitative research explores the participants' realities. Exploring the views and experiences of practicum supervisors in practicum supervision sheds light on their understanding of what constitutes competent supervision, their practices and activities, and their challenges and opportunities. As Lester (1999) stated, phenomenological research "exposes taken-for-granted assumptions or challenges a comfortable status quo…prompting action or challenging complacency."

2015 Study of Undergraduate Psychology Practicum Program

In Lamzon's (2015) study of the undergraduate psychology practicum program, the main problem was: What are the views and experiences of practicum teachers in practicum supervision? The qualitative phenomenological research design was used to draw out the views and experiences of 12 HEI-based undergraduate psychology practicum teachers from different parts of the country. All 12 schools offered both undergraduate and graduate programs in psychology. The 12 schools were the following: Ateneo de Manila University, De La Salle University—Manila, Miriam College, St. Paul College, and University of the Philippines in Luzon; Negros Oriental State University, Silliman University, University of San Carlos, and University of San Jose Recoletos in Visayas; and Ateneo de Zamboanga, San Pedro College, and Xavier University in Mindanao.

A 17-item semi-structured interview guide was pilot-tested with three undergraduate teacher-supervisors. Only three of the 12 key informants (KIs) were interviewed in person; the majority responded via email and

SMS. Other sources of data included relevant documents (e.g., MOAs and practicum manuals or guides) provided by key informants.

Lamzon's (2015) study indicated that the 12 KIs had multiple roles and responsibilities on top of being a practicum teacher-supervisor. Except for one who was a full-time teacher, they all held more than one designation: six were psychology program heads, four were full-time faculty members, one was a department vice chair, and another was director of a service learning institute. The number of years of experience supervising undergraduate psychology practicum students ranged from two to 15 years, with six to 90 students or one to two classes each term or semester. Four had doctorate degrees (three in psychology; one in Philippine studies); seven were master's degree holders (all in psychology with two exceptions—one in guidance and counseling, the other in industrial counseling). Four were licensed psychologists, one was a registered guidance counselor, two were licensed teachers, and the rest did not have a license. None had received formal training in practicum supervision.

Taking this diverse background into account, varying experiences were expected. Some had well-established structures as shown in the contents of their practicum guide/manual and in the way they described the policies and their duties and responsibilities. Others did not follow written procedures but relied on mechanisms that had worked well in the past. There were also differences in the schedule when the subject was offered, the number of settings, and the number of hours to be completed. Typically, except for two schools that chose to offer practicum in the summer, the subject was offered within a regular term, and students were sent to more than one setting (range = one to four settings) [e.g., community, government, nongovernment organizations (NGOs), industrial, and clinical settings]. Site supervisors also evaluated/graded the students. In addition, some practicum teachers considered self- and peer-ratings as important components in the overall ratings.

Preparing all stakeholders. All psychology practicum teacher-supervisors agreed that all stakeholders (i.e., practicum students or interns, practicum teacher-supervisor, and site supervisor) have to be sufficiently prepared to take on their particular roles. There should be a "fit" between the student and the site because, for instance, "not all students have the personality for clinical placements (e.g., level of maturity, some personal

issues that may be activated in the clinical setting)." The site as well must be selected for optimal experience. One teacher-supervisor referred to practicum as a "socialization process"—allowing students to be familiar with the agency they serve in the same way that the agency also gets acquainted with the students' personality, skills, and abilities. This gives both parties the opportunity to consider prospective employment.

Teaching the Practicum Subject. As stated in CHED Memo No. 38 (s. 2010), practicum is an elective. As such, it is treated just like any other subject. Practicum and other psychology major subjects similarly require regular meetings, imparting knowledge, monitoring of student's progress, giving of grades, and looking into student welfare. However, teaching practicum inevitably involves supervision; the teacher is required to do close monitoring, follow-up, personalized consultation, and dialogue with site supervisors. Generally, the main difference can be summed up into theory and practice or application. In addition, a difference lies in the inherent administrative work that practicum supervision demands. Both differ in requirements, and there are multiple sources of the student's grades. In contrast to teaching other majors, practicum involves administrative work and interaction with people in the industry. Grading is done at the end of the term, and grades do not just come from the teacher—the onsite supervisor also contributes to the final grade. Finally, because students spend more time in the field than in the classroom, so does the teacher.

Establishing a Rationale for Undergraduate Practicum. Despite practicum being an elective and therefore optional, practicum teacher-supervisors still find it generally relevant as it enables students to see the connection between classroom experience and real-life scenarios. One teacher, in particular, considered practicum as a superior teaching strategy because students are engaged in real life situations under the supervision of a professional. Moreover, it helps students in knowing further their field of interest and in deciding which field to pursue after graduation. Two examples are provided:

> "Many students do not have firm plans after graduation when they choose the practicum site. In fact, it is through the practicum experience that they realize whether or not they are cut out for (1) clinical work, (2) HR work, or (3) both. For example, some students claim that HR work is "boring", so they explore teaching or clinical work. Those who enjoyed working with children proceed to SPED or a career in education after graduation. Those who enjoyed HR work take a master's degree in HR soon after graduation. Those who enjoyed working in the psychiatric ward proceed to a medical degree…"

> "For a career track dimension of the licensure exam, the practicum/ internship program is essential because it gives premium to the experiences and acquired knowledge of the students. Practicum will coordinate the balance between the theory-classroom-based types of education and the experiential-type-based education."

Essentially, the practicum experience prepares individuals to become responsible professionals. It is not only a venue for value formation, but it serves as a feedback mechanism on how best the subject should be taught and information on the status of psychology in the field. Said one practicum teacher, "It's really win–win…I know they learn something; they also provide services that maybe I will not be able to do because I have so many things on my plate. So I really appreciate it."

Preparing Practicum Teachers in Supervision. Generally, the practicum teachers did not have any formal training. They learned the craft of practicum supervision while experiencing it such that, over the years, they became more and more familiar with the tasks and responsibilities of being a practicum teacher-supervisor. They were all academically oriented, i.e., inclined to teaching within the classroom. The practicum subject is considered a teaching load but a more demanding one. Their other (administrative) experiences somehow helped them in their role as practicum supervisors. For instance,

> "There was no special preparation save for basic supervisory and coordinating training in my previous roles as school administrator (Asst. Principal when I was in the High School, and Planning Officer when I was in General Administration, and as chair). It also helped that I have personally engaged in counseling, training, program development, human resources tasks, and field research as a professional these past 39 years."(KI3)

Other mechanisms that proved helpful included reviewing pertinent documents relative to practicum (e.g., syllabi) and school policies and attending CHED's orientation and related seminars and fora. One teacher said that being a teacher and psychologist is in themselves already a form of preparation because the two roles are inseparable in practicum supervision. Learning from a predecessor was another form of preparing one's self for the role. Confidence developed from term to term and from year to year: "I did not receive any training related to it, so in essence, every year, it is a learning process…a trial and error every single time. Each year, I encounter new problems and challenges, so I make sure that adequate measures are taken not to repeat that problem on the next round of OJT/interns."

Time management is key. One practicum teacher said, "One has to have good time management because the visit has to be done in between my usual duties. The orientation for the students has to be done early so that rules will be followed." But presence of mind was a factor as well.

Institutional/Administrative Support. Administrative support covered moral and technical support particularly from direct superiors and colleagues in their respective departments. It also included minor privileges afforded by the school. Financial support included provision for transportation and other incidental expenses. For example, "The department offers the program as part of its institutionalized courses and thus provides the logistics for running the course, e.g., liaison with companies, and reproduction of materials." Another unique form of administrative support is a privilege in terms of ease in going in and out of the campus even during office hours. Monitoring students on site requires visits, and practicum teachers naturally have to leave the campus. Still, some schools apparently do not have clear structures supporting the practicum program because they tend to leave the responsibility of running the program to the practicum teacher alone.

Partnerships and Collaboration. With the exception of one who had limited interaction with host institutions, the majority were in harmony in saying that it has been mutually beneficial in spite of some problems and difficulties encountered along the way. The partnership with host institutions/agencies was generally referred to as a "give-and-take relationship." It also helped a lot when both parties, the academe and the host or partner institutions, have established and maintained very good relationship with each other for quite a time and are familiar with each other's roles and

responsibilities. With established partnerships, each party is supportive, and giving feedback is easy. It was the most advantageous when host institutions had their alumni among their personnel.

Keeping up with the Standards. Although there is already a general directive in terms of how the practicum subject is to be treated, practicum teachers use different strategies. These practices are seen as attempts to establish standards in actualizing the objectives of the subject and include how the practicum subject is treated, the number of settings and hours to be completed, the number of students per site, practicum schedules and fees, and considerations in site selection. As per CHED Memo No. 38 (s. 2010), practicum is an elective and is given a three-unit teaching load. However, based on the interviews, two schools offered it twice in a school year, as Practicum 1 (first semester) and Practicum 2 (second semester), each with a three-unit credit.

Similarly, Section 11 of the memo specifies that practicum is an elective that should be taken after Psychological Assessment and preferably in the summer of third year. However, while Psychological Assessment and other subjects that are prerequisites to Psychological Assessment serve as prerequisites to Practicum, schools have different practices in terms of prerequisite subjects. They also vary with regard to the schedule as to when it is offered—i.e., summer or during a regular semester. Some said that Practicum could be taken once all the other major subjects have been taken. For other schools however, there are specific major subjects that serve as prerequisites. The student's year level standing is also considered.

In terms of the number of settings and hours to be completed, practicum teacher-supervisors have different practices. Normally, they send students to more than one setting, and the number of settings varies from one to four—including community, government, nongovernment organizations (NGOs), industrial, and clinical settings. There are situations when the number of hours is adjusted or increased based on the recommendation of site supervisors who believe that more hours is needed to help students become more focused on their assigned tasks. As one teacher narrated, "Company representatives and stakeholders who, during the practicum forum, said that our old scheme of 300 hours divided into three fields, create an atmosphere of 'hurrying up' among interns so it seemed as if interns wanted to get their 100 hours per field over and done with so that they would not lose time applying

for another field. Because of this, they focused less on the tasks at hand and on enjoying learning how things are done in the real working world." Apparently, most schools add more hours to what is stipulated in the CHED mandate which is only 150 hours. The reasons included the following: a) giving students more time for exposure and b) time for seminars other than onsite hours. There are also schools that, with the teacher's guidance, allow students to decide on how to structure their schedule in each practicum site based on their subject loading. Such strategy allows them to experience what it is like to be making decisions on their own.

Placement Practices. One challenge in placing students in the various sites is the number of students per site. Some schools limit the number of students they place in each site, but others do not have any fixed number. One school adopted a 'buddy' system for safety and security reasons. Likewise, there are sites that are free to determine the number of students they can accommodate and supervise. According to one teacher, "We do not have a limit in terms of the maximum number of interns for each setting. Usually, most of our students go into IO or social psych. Only a handful go into counseling or clinical." Some sites charge a certain amount as practicum or affiliation fees. Typically, however, only the clinical site and those in which students are exposed to testing charge such fees. While some teachers and students find the fees reasonable, others view such as exorbitant. At times the fees are what deter students from choosing sites.

With respect to selecting practicum sites, the primary consideration is that it should be a legal entity. Other than that, practicum teachers vary in their practice in terms of choosing the sites. Some have a specific set of criteria for the site and the onsite supervisor while others' main requirement is that there is a site supervisor, preferably with a background in psychology, who is willing to supervise the students. It is also expected that the site is able to provide the kind of exposure that the students need. The site's track record is likewise considered. Site assessment is typically done by the practicum teacher even in instances when possible sites would ask for practicum students. As such, practicum teachers really take time to assess prospective sites particularly with regard to its capability to provide meaningful practicum exposure to students. "Linkages made by the department are placed in the directory, and MOA has to exist." Instead of setting qualifications or criteria for site supervisors, one school gives much importance to goal-setting; regardless of who supervises

the students in the field, regardless of the supervisor's qualifications, students must accomplish their goals and that is what matters the most.

Conversely, if there are unfavorable comments about a particular site, generally, students are just allowed to finish their practicum hours if the situation is still tolerable. In extreme situations, students are withdrawn from the site. Sites that do not live up to the institutions' expectations or those who break the provisions stipulated in the memorandum of agreement/ understanding (MOA/MOU) are usually blacklisted in the roster of practicum sites.

At some schools, students are given the leeway to look for possible sites they think will give them the most relevant practicum exposure. Thus, they can suggest preferred sites, but the final approval still rests with the practicum supervisor because minimum site requirements also have to be taken into account. The specific track of students is also a consideration. For instance, one school discouraged students from spending their practicum in settings irrelevant to their career path. One teacher even discouraged students from having their exposure in the clinical setting, saying "we are not preparing them for that… It's a graduate level exposure… If they do go to a psychiatric ward, the work that I would expect them to do is mere group dynamics… and the one handling their program is not a psychologist but occupational therapists." In addition, the CHED memo does not allow practicum outside the country.

Interns are usually endorsed to companies where the university has existing MOAs. Companies will still have the discretion on intern selection processes. The school is strictly following the guidelines of CHED in sending interns to different settings, so basically, they are only exposed to institutions where they can optimize their learning and future profession. The students prepare an application letter, resume, and copy of grades. The department provides the MOU and endorsement letter; students personally proceed to their chosen sites to apply. The process is similar to an employee applying for a job.

There are also academic institutions that make use of the different offices within the campus as venue for practicum. Site proximity to the student's home is also considered. The practicum supervisor's familiarity with the site's preferences makes it easier for him/her to choose practicum students who match the site's criteria.

Practicum Guide. Perhaps what helped in the implementation of the practicum program is that many of the teachers had a practicum manual; for the minority that did not have a manual, the course syllabus served as their guide. Others based their practice on what had been passed on to them. However, they continuously improved their practice as necessary by conducting evaluation usually done as a team. Other pertinent documents were the MOA or MOU. The practicum guide/manual, in particular, stipulates the roles and responsibilities of the parties involved. It also contains policies on attendance, tardiness, requirements, grade computation, various forms, and communication templates. Proper behavior/decorum and the corresponding sanctions on inappropriate behaviors are also stipulated. Compared with the practicum manual/guide, the MOA is limited in its scope as it is more focused on the responsibilities of the three parties (academic institution and partner institution representatives and the practicum student).

Problems Encountered and Strategies Employed in Addressing Them. In the course of implementing the practicum program, despite all their best efforts, practicum teachers commonly encounter problems. These problems do not just happen during the actual practicum engagement but may also arise before or after the practicum engagement. They typically emanate from the practicum students, the practicum sites, the practicum site supervisors, and the HEI structure or system. Student factors included behavior and attitude (e.g., boredom tardiness, sleeping during work hours, lack of sense of responsibility, dropping out without official communication). Some site supervisors have refused to sign the MOA; others assign irrelevant or inappropriate tasks, demand more duty hours, have unrealistic expectations, or are unavailable during visits. Some problems have involved ethical issues, including sexual harassment. Normally, when the problems relate to situations where there are clear guidelines provided for in the MOA, addressing the issue is more easily done. Dos and don'ts are usually stipulated in the MOU (e.g., no duty beyond 5 PM; interns should not be given personal errands). Fortunately, in cases where students do not receive the kind of experience that they are supposed to gain, they are given the choice to change or transfer to another site.

In Lamzon's (2015) study, all sexual harassment complaints occurred in the industrial setting, but these incidents did not get to the attention of the practicum teacher directly but via their classmates (i.e., cointerns). However, as they also indicated, they no longer go through the long process of resolving

the case with the site. For them, the most logical action to take is to sever the partnership with the site by not placing practicum students there in the next term, especially if the alleged perpetrator is still connected with the site. Although some of them have specific guidelines on how to go about resolving issues such as sexual harassment, they would just pull out the student and give her/him options to transfer to another site. The alleged victim of sexual harassment is given appropriate assistance in the form of counseling. With this kind of situation, students somewhat lack the necessary protection from different forms of abuse that they may not even be aware of. On the other hand, there are practicum teachers who have not yet experienced dealing with any major complaints, e.g., situations likely to lead to a severance of ties with partner agencies. Nonetheless, they have created certain procedures in case there are complaints—either from the students or from the site supervisors—and likewise devised means for preventing or mitigating problems.

Additionally, some of the problems experienced by practicum teachers resulted from the school system itself over which they apparently do not have much control, including provisions for site visits and practicum subject schedule. Site visit is among the main and most difficult tasks of practicum teachers and along with it is the need for transportation provisions. In many cases, the practicum teacher has to shoulder the expense. Nonetheless, they still conduct site visits because they know that open communication among stakeholders about any issue is what maintains and cements the partnership between the practicum teacher, representing the academic institution, and the site supervisor, the partner agency/institution representative.

Challenges Confronting Practicum Teachers. In Lamzon's (2015) study, challenges are still classified as problems. However, these are more than just the usual problems because these could not simply be resolved by practicum teachers alone but require collaborative efforts of all parties. The long-term solutions are likely to pave the way for a better implementation of the practicum program that is expected to benefit all stakeholders. Some of these challenges are related to the problems cited earlier. However, they become challenges because, as mentioned, they are not easy to deal with.

Based on the practicum teachers' responses, these were found challenging: 1) practicum as teaching load (tasks include checking journals/outputs, site visits, consultations, attending to student concerns); 2) site-related issues (delayed completion of documents, conflicting rules between the parties,

rejection of student application, increasing number of students, cancellation of approved practicum schedule, lack of clear practicum program on site); and 3) practicum as summer offering. Stakeholders experience difficulties at various stages of the practicum engagement. These difficulties are even more challenging when the practicum subject is offered during the summer term. Taking into account the preparation required—preparing documents, contacting partner agencies, arranging schedules for the different settings, conducting orientation activities, and so on—summertime is insufficient for students to accumulate the required number of hours and, as a result, the greater the likelihood that students are not readily accepted by prospective agencies.

Opportunities for the Enhancement of Psychology Practicum. Despite various challenges and concerns, a number of opportunities have been articulated to improve supervision practices that would impact the teaching of the practicum subject in particular and the practice of the psychology profession in general. These opportunities hope to provide inputs in standardizing the implementation of the practicum program in the psychology undergraduate level. Likewise, these will serve as basis in improving not only the practicum program of other undergraduate courses but also the psychology graduate program. The opportunities or possibilities offered by the practicum teachers to improve practicum supervision include the need: for practicum to be treated not just as subject, for practicum teachers to be supported, to educate and keep stakeholders updated, and to collaborate with other stakeholders and the possibility of integrating practicum into relevant existing programs of the school.

Realizing that practicum is the summit of the students' experience in tertiary education, it should be packaged in a way that students will excitedly anticipate graduation. "Make it something that the student will look forward to…the culmination of their learning." Some of the teachers indicated that practicum should be a required subject, not just an elective, so that all students get the opportunity to be exposed to the different fields of psychology. But it is for the reason that practicum is different from other majors that it should be supported. Teachers feel that they deserve to be provided with the necessary support that comes with continuing education and training, updating/exposure, time, financial resources, and an easing of their work load. Suggestions included a) collaborative work with coteachers

so that the work load is distributed, b) having field supervisors in addition to onsite supervisors, and c) having a department practicum coordinator. With improved ratio between teacher and students and with adequate training and continuous updating, practicum teachers are better able to perform their duties and responsibilities particularly in molding students to become professionals. Because psychology is basically a research-filled discipline, teachers can inspire students to become scientists and thereby help expand knowledge about the field through research. Their own observations and experiences in the field can be a rich source for research.

Recognizing that much has yet to be done to improve practicum supervision practices that eventually lead to a more enhanced implementation of the practicum program, practicum teachers acknowledge the fact that a collective effort among stakeholders is necessary as each has a role to play to ensure that such improvements are achieved. For instance, on the part of HEIs, the practicum teachers feel the need for them to identify possible practicum sites including those outside the city/town where the HEI is located, establish partnerships with them, and increase the number of partner institutions for each setting. Strengthening collaboration is also important to ensure that students really benefit from the practicum experience. There is a need to identify more institutions willing to accept interns during the summer. As part of the collaborative relationship, the practicum teachers also observed the need for partner institutions to have site supervisors who really know how to supervise; they also need to be professionally updated. Likewise, teachers articulated specific suggestions for professional organizations, particularly the Psychological Association of the Philippines (PAP) of which practicum teachers are members, to consider a) accreditation mechanism for practicum programs and practicum sites, and b) lobbying for practicum as required subject.

In light of RA 10029, the practicum teachers recognized the need to educate partner institutions about legal mandates including PRC and CHED memoranda and guidelines to ensure smooth collaboration among stakeholders. Among other things, undergraduate psychology students should be prepared to take the licensure examination for psychometricians. However, because of the broadness of the psychology field, the practicum experience may not necessarily provide them the needed exposure solely for psychometric work.

To address such concern, service learning is integrated into the practicum subject or vice-versa. Three of the practicum teachers indicated a practicum–service integration strategy. "It's not really internship…it's a continuum of community engagements…the aim is really to help the people in the community." Further, "unlike in practicum or internship in which only the practicum students benefit as a result of their exposure in the practicum sites, in service learning, both parties benefit from the partnership; the students learn from rendering relevant service to the partner institution/ agency and the latter also receives the much-needed service."

To summarize Lamzon's (2015) findings, the practicum subject, as shared by practicum teacher-supervisors, has no uniform system particularly in terms of when the subject is to be offered (summer or regular term), how the subject is treated (whether required or optional), the number of units assigned to the subject (three or six units), the number of practicum subjects to be taken, the number of site exposures, the number of hours to be completed, the schedule of practicum duty, and the manner of evaluating the readiness of the students as well as the ways by which their practicum performance is evaluated. Similarly, the teachers observed different practices in the various phases of the practicum period and had diverse guidelines on how the practicum should be run. Some had well-defined practicum manuals while others did not have written documents to guide them. Seemingly, their practices evolved as they gained experience supervising students and networking with partner institutions from year to year.

Moreover, on top of the teaching load remuneration, a few received honorarium for handling the practicum subject while most of them received the equivalent teaching compensation. In addition, some schools do not have clear structures supportive of the practicum program, and in many cases, except for the support of their colleagues and immediate head in the department, practicum teachers are left on their own in running the program. Neither do they have training exposure in practicum supervision. Nevertheless, despite work they described as exhausting and fulfilling, they were still able to deliver what was expected of them.

DISCUSSION

According to Bandura (2006, cited in Skaalvik & Skaalvik, 2009), individuals can have some control over their actions because they are basically "self-organizing, proactive, self-regulating, and self-reflecting." Despite the practicum teachers' less-than-ideal situation, their self-efficacy impacts their teaching behavior as well as the way they handle practicum supervision such that they are able to carry out their duties and responsibilities successfully. Moreover, their belief in their competence in running the practicum program in spite of the lack of adequate administrative/financial support and the attendant problems of supervision and networking with partner institutions make them transcend these difficulties. The teachers' views support the idea of Chaminuka and Kaputa (2014) that practicum promotes individual development as it affects the way they look at things, their beliefs and values which in the process, enrich their skills. Poole (2004, cited in Chaminuka & Kaputa, 2014) specified that among the advantages students obtained from practicum was the opportunity to gain additional knowledge, understanding, and experience as they put into practice theories and intervention strategies learned. At the same time, they are better equipped with knowledge and learn to appreciate various issues (e.g., ethical and legal issues) pertinent to the profession.

Bold and Chenoweth (2008) stated that practicum links theory, research, and practice; all of which are typically learned in distinct and separate ways. Students' experiences in practicum settings reinforce the socioconstructivism learning theory espoused by Vygotsky (Most influential learning theories, n.d.); the practicum experience adequately suits the assertion that learning takes place as students participate and engage in "social negotiation."

The practicum teachers also viewed practicum as a culmination of the students' academic preparation, giving their educators a sense of personal fulfillment and a sense of payback for all their efforts. This view supports the idea of Dehn and colleagues (cited in Edwards & Kananack, 2005) when they said that the sense of "giving back," of sharing one's time, ideas, learning, and thoughts, gives one a feeling of satisfaction. While giving back is both personally and professionally fulfilling, the supervisor, in the process of supervising, is at the same time improving his/her knowledge

and familiarity of theories, concepts, and practices in the field. Parks (n.d.) has said that supervision is probably the loftiest vocation in the helping professions because what goes with it is the "passing on the knowledge and skill, mentoring, monitoring, overseeing and evaluating" paramount to the continuance of the profession. The supervisor–supervisee partnership provides the foundation upon which the various professions are perpetuated through next generations.

Mateo (2010) had found graduate level practicum supervisors "accommodating and approachable" despite being "busy and overburdened." Edwards and Kananack (2005) also affirmed that school psychologists mentoring graduate practicum students go through a range of emotions, from exceedingly delightful to startlingly challenging and frustrating—feelings brought about by various situations encountered on site. Despite anticipating problems, practicum supervisors are still confronted with unexpected situations.

As Lamzon's (2015) study showed, practicum teachers did not have formal preparations or training in supervision; much of their knowledge about supervision was either passed on to them by former practicum teachers or a result of their own experience in the field. However, Bernard and Goodyear (cited in Cochrane, Salyers, and Ding, 2010) stressed that supervision "not only requires preparation but also is an ethical imperative." This emphasis on adherence to what is ethical particularly in the supervisory process was greatly advocated by practicum supervisors of master's level counseling programs in Jamaica (Stupart, Rehfuss, & Parks-Savage, 2010). In particular, this latter study indicated that, although supervisors still pointed out a need for more supervision training, they had received some forms of training in this area from professional seminars and workshops (60%), academic coursework (23%), graduate degree in supervision (8%), and in-service workshop (8%). Their findings also indicated that less than half of the respondents (47%) were members of professional health organizations. And the major method of supervision employed was case consultation with groups of students.

In the local front, the studies of Mateo (2010) and Laud (2013) indicated that supervision practices in the country are a far cry from what is ideal because of a lack of supervision training as well as institutions offering courses in supervision. Nonetheless, in this study, because supervision is part of the practicum as a teaching load given to practicum teachers who were apparently

thrust unprepared for the task of supervision, they tried to do the best they could even if at times they received limited technical and financial support from their respective academic institutions. With the feedback they received from students and partner institutions, the practicum exposure, with their guidance and supervision, was still able to accomplish the purpose for which it was intended. This perception validates the report of Hatcher, Wise, Grus, Mangione, and Emmons (2012) showing that, by and large, practicum sites conveyed adequate means for carrying out training. In Nippak's (2012) study, students' attitude, professionalism, work ethic, and overall work performance impressed site supervisors who recognized that practicum students demonstrated an impact on the institutions' management decisions. Practicum students' influence can perhaps be a force in forging stronger partnership among stakeholders, particularly between the school and partner agencies. The partnership between school supervisors or practicum teachers and the site supervisors is believed to bring about favorable alliance between the school and the site and is expected to present opportunities that will further reinforce the partnership (Al-Mekhlafi & Naji, 2013). However, Ellis (2010) contended that, because of the lack of frameworks and support provisions that connect theory and practice in academic institutions' work-related programs, most practicum supervisors are not prepared and they unsuccessfully carry out what students need while on practicum. In fact, in their study on the incidence of inadequate and harmful supervision, Ellis and colleagues (2013) stated that 93% of the supervisees evaluated conveyed inadequate supervision experience and another 35.3% received harmful supervision. The authors explained that harmful supervision is part of, though different from inadequate supervision.

Indeed, as Harvey and Struzziero (2008) pointed out, competence in supervision calls for adequate and formal training, adding that the lack of training in supervision is not in harmony with what is required in other fields of psychology such as counseling psychology and clinical psychology that have clear standards with regard to training, certification, and licensure. The situation portrays the discrepancy between what professional organizations advocate and what is actually experienced by stakeholders in the delivery of supervision. In a research examining 20 supervisor trainees meant to assess contemporary thinking about psychotherapy supervisor training and to look into current research investigating supervisor training/education and supervision, Watkins (2012) concluded that 1) the clinical validity of supervisor education appears

to be strong, solid, and sound; 2) although research suggests that supervisor training can have value in stimulating the development of supervisor trainees and better preparing them for the supervisory role, any such empirical support or validity should be regarded as tentative at best; and 3) the most formidable challenge for psychotherapy supervisor education may well be correcting the imbalance that currently exists between clinical and empirical validity and "raising the bar" on the rigor, relevance, and replicability of future supervisor training research. Smith (2009) highlighted that training and competency in supervision is extremely important because a "'master' clinician may not always be a 'master' supervisor." But then, in spite of the cognizance that supervision is a core competency in psychology and that it is definitely a significant field of specialization among psychologists, Falender and colleagues (2004) observed that standards in supervision that include formal training have generally been underplayed.

With regard to the various responsibilities of practicum teachers in the implementation of the practicum program, Coll and Eames (cited in Hays & Clements, 2011) asserted that the role of motivating students to be actively engaged in practicum work is vital, emphasizing that, with the proper guidance and direction of a competent supervisor, students will be able to profit much from the practicum experience. As indicated in the responses of practicum teachers in Lamzon's (2015) study, a practicum manual, syllabus, or related document served as their guide in the implementation of the practicum program. At Portland State University (PSU, n.d.), a practicum resource book is made available to students. To qualify for practicum, students must be at the junior level and must have taken major subjects related to the practicum setting. Specific learning objectives take into account the student's interest and the setting. Basically, the practicum program aims to 1) apply psychological principles to real-world human problems, 2) gain exposure to potential career paths, and 3) gain an understanding of ethical and social dimensions that arise in social service organizations. The students are not expected to develop professional skills during the course of the practicum, but learning objectives include the development of skills such as interviewing, group facilitation, and introductory assessment skills (PSU, n.d.).

The findings of Lamzon's (2015) study also indicated that, although the practicum teacher primarily takes care of looking for, assessing, and eventually selecting practicum sites, students can also recommend prospective sites

subject to the approval of their teacher. Likewise, the student's interest is taken into consideration in the site selection. This practice is similarly observed in PSU where students work closely with the faculty advisor and thoroughly consider their career goals. Once the area of interest is identified, the student is expected to meet with the teacher to confer about possible practicum sites that can provide learning experiences that would allow the student to apply psychological theories and principles or research to social concerns. After choosing the site, the student makes a formal agreement with the site supervisor and the faculty sponsor. The faculty sponsor should be knowledgeable about the selected field setting, meaning it has to be aligned with the faculty's subspecialty in psychology. The faculty advisor prepares pertinent forms and documents including the contract (PSU, n.d.).

In their study on the supervisory practices of supervising teachers, Al-Mekhlafi and Naji (2013) disclosed that student interns believed that their supervising teachers fulfilled their role in the course of the practicum period and that the supervising teacher's personal attributes were ranked number one among the five subscales on supervisory practices and behaviors. Among the five subscales, modeling was ranked lowest. In contrast, the supervising teachers felt that they fulfilled their role primarily through modeling and secondly by their personal attributes.

In a study by Bucky and colleagues (2010) intended to identify the strengths and weaknesses in supervisor characteristics influential to the supervisee's clinical training experience and professional development, doctoral psychology student–supervisee respondents indicated that they consider the following characteristics as strengths possessed by their supervisors: above-average intelligence, a healthy attitude toward themselves, ethical integrity, and effective listening skills. Additionally, they see areas that need to be enhanced, namely, awareness of counter transference in supervision, the ability to stay focused, the ability to meet time constraints, commitment to the supervisory alliance, and an ability to challenge the supervisee effectively. Overall, majority of participants (68%) considered their supervisor as outstanding, very few (5%) rated their supervisor as acceptable, and 12% perceived their supervisors as poor (Bucky, Marques, Alley, & Karp, 2010).

Drawing from their experiences as practicum teachers, their role can be described as what Coll and Eames (2000) referred to as a model in cooperative education in which coordinators (practicum teachers, in this case) hold dual

roles as placement coordinator and teaching faculty. Wilson (cited in Coll & Eames, 2000) explained that, with these dual or even multiple roles, they are educators whose specialization is the provision of meaningful learning experiences in the form of work situations and the assisting of students to relate these experiences to their educational goals. In addition, Mosbacker (cited in Coll & Eames, 2000) pointed out that, aside from their tasks in the placement phase—in establishing/maintaining linkages with host agencies, in providing link among various stakeholders, and in promoting the status of cooperative education—the role also involves career guidance for students, the enrichment and monitoring of learning, and administering assessment. With reference to the provisions of the American Psychological Association (APA), Mateo (2010) asserted that supervisors have the major responsibility to oversee the services provided by trainees and to protect their welfare by conducting regular meetings, going over their work, and giving regular feedback and evaluation or assessment. The learning experience is expected to be structured such that weekly supervision (half an hour or more) includes meetings with feedback giving and discussion of issues and concerns relative to the student's performance (PSU, n.d.).

Further, according to the study of Stupart and others (2010), the assessment component particularly among supervisees was an important factor in the supervisory process for the supervisors. Aside from the supervisees, other parties also have to be evaluated to provide a balanced picture of the learning experience. This contention is affirmed by Edwards and Kananack (2005) who indicated that a structured assessment of practicum should include multiple sources—self-evaluation, program evaluation, and other measures—because all these can provide input to enhance training outcomes. Falender and Shafranske (cited in Edwards & Kananack, 2005) claimed that feedback given to supervisors is also helpful in enhancing practicum experiences.

As Lamzon's (2015) study revealed, practicum teachers are already burdened by the balancing act between practicum tasks and other teaching or administrative functions. Problems arose from various sources, namely, student behaviors and attitudes, practicum sites, or even the academic institution itself. Ideally, in practicum settings, students obtain first-hand information about the settings and clients, tools, and techniques and skills along with values such as teamwork, leadership, and policy in addition to theory application (e.g., Florida Institute of Technology School of Psychology).

Basically, in the delivery of practicum, there are two supervisors—from the school and from the site—who oversee students while on practicum. Both are expected to have the necessary qualifications. The basic professional requirement needed of partner institutions is that they have competent personnel able to provide adequate supervision (Chaminuka & Kaputa, 2014). It is expected that the site supervisor orients the practicum students with the site's rules and regulations, spends a predefined number of hours in direct supervision, and performs other tasks relative to the practicum student's expected experiences in the setting. As a professional role model, he/she is expected to have adequate training, competence, and familiarity about the field as proven by his/her experience in the practice of the profession.

With regard to practices prior to placement, practicum teachers perform activities such as assessing readiness or qualifications of students, conducting orientation activities, and preparing documents and forms. These practices are closely congruent with what Al-Mekhlafi and Naji (2013) described in their study among practicum supervisors at the University of Sohar, Oman, showing that the course coordinator would meet all the practicum students prior to the start of the term, group them into fours or fives, and accompany them to the students' preferred school sites. However, unlike most schools in Lamzon's findings, the University of Sohar has a university supervisor who would designate a faculty member of the department as supervisor who then works with the cooperating teacher in planning the student's schedule. The university supervisor schedules visits three to four times each term, benefiting the students and other parties involved (Al-Mekhlafi & Naji, 2013).

According to Chaminuka and Kaputa (2014), the role of the internal supervisor includes providing direction and coordination in choosing the sites, acting accordingly on site, scheduling visits in advance, and obtaining feedback from the site. Understandably, whenever there are concerns brought by the site supervisor to his/her attention, he/she is expected to respond promptly. Generally, the internal supervisor is considered as the point person between the school and the practicum site and as such, he/she is expected to provide the necessary coordination for the students' practicum experiences (Chaminuka & Kaputa, 2014). Similarly, the academic or school-based supervisor is tasked to create partnership with site supervisors that will bring about opportunities for practicum students to obtain worthwhile work and life experiences. Ideally, he/she is expected to determine the readiness of

practicum sites and site supervisors to ensure that they are equipped to provide relevant work-learning experiences to practicum students (Hays & Clements, 2011). On the other hand, external supervision requires maintaining contact with the school so that any concern or update about the practicum students can easily be communicated. This can be done through phone or site visit. Likewise, site supervisors conduct scheduled feedback sessions about the student's performance and behavior in relation to pre-established goals. Aside from scheduled sessions, they also hold final evaluation with the student, and this is reviewed prior to submission to the internal supervisor (Chaminuka & Kaputa, 2014).

As part of their duties and responsibilities, practicum teachers adopt various ways of supervising their students, such as requiring students weekly journals and reflections as their way of knowing how the students are thinking, doing, and feeling on site; they also conduct weekly regular meetings. Edwards and Kananack (2005) affirm that frequent debriefing and obliging supervisees to have a daily practicum journal are expected to facilitate the development of abilities in attending to various situations they are likely to encounter in the future. Hodge and others (2003) also postulated that journaling affords students a means of identifying and addressing issues and concerns and of reflecting upon best practices. Fouad et al. (2009) also said that there is evidence that reflection and self-assessment facilitate supervisees to receive and assimilate supervisory feedback fundamental to supervision. Indeed, reflection and self-assessments are considered best supervisory practices that can be adopted by both supervisor and supervisee. At PSU, one requirement is a practicum log that shows the predetermined hours completed on weekly bases—a practicum journal containing weekly account of experiences focusing on primary concerns that arise from employing psychological principles in the practicum setting; personal reflections are expected to be included in the journal.

One of the toxic problems cited in students' practicum experiences is rejection, such as on the part of individuals in a gender minority. This finding supports the study of Chaminuka and Kaputa (2014) showing that students initially are confronted with problems in finding sites and even have to deal with antipathy at some agencies. Some practicum students also felt exploited. Lamzon's (2015) study indicated that some students felt taken advantage of by site supervisors and they experienced sexual harassment on site. Chaminuka

and Kaputa, however, maintain that resolution of problems or conflicts are easily facilitated when both internal (school) and external (site) supervisors have open communication; the same mechanisms were resorted to by the practicum teachers. Problems are also more easily resolved when there are documents that guide all parties involved. Such documents indicate the objectives of the practicum exposure as well as address issues and concerns.

Among the challenges faced by practicum teachers was time management. This experience is allied with the findings of a survey aimed to shed light on how the training standard was satisfied in the field of clinical supervision among training directors or designates of accredited clinical and counseling programs of the Canadian Psychological Association in which supervisors concurred that insufficiency of time for supervision was among the challenges they had to deal with (Hadjistavropoulos, Kehler, & Hadjistavropoulos, 2010). Because practicum teachers appear to be one in saying that time management is really essential, Bernard and Goodyear (1992, cited in Mateo, 2010) emphasized that one of the supervisor's roles concerns planning. However, Mateo's (2010) study conveyed that, among graduate students who had supervision experiences from their supervisors, there was absence of a definite plan schedule in conducting supervision.

Additionally, the number of students that practicum teachers handle was another challenge—ranging from ten to 50 in a class and from two to ten in specific sites. The data appear to portray a different scenario from the findings of Cochrane, Salyers, and Ding (2010) who noted that the number of interns supervised by almost half (46.9%) of the respondents is between one to five interns which is relatively manageable. Likewise, about 17.7% reported having six to ten interns, and another 23% stated supervising 11 to 50 interns. Understandably, this disparity can be attributed to the reality that the number of practicum students supervised in the undergraduate level is bigger than those in the graduate level.

As gleaned from teacher experiences, multitasking appears to be the usual routine among practicum teachers who have to juggle not only classroom tasks but also a set of other tasks integral to practicum teaching. Although classroom teaching comes naturally to them, going outside their comfort zones—that is, their classrooms—to do supervisory and networking functions requiring time and financial resources appears to be burdensome. Catapano (n.d.), in his article on multi-classroom management, is of the opinion that

doing so many things at the same time is actually counterproductive. Citing research findings conducted by Meyer, he said that our attention does not have the capability to focus on everything that we want to attend to because our brain is not structured for such. This means that we can perform at our best only when we focus on one thing or task at a given time.

In addition to the multitasking role, Fisher (2011, citing Blase, Blase, & Du, 2008; Lambert et al., 2006) mentioned that the lack of administrative support is among the reasons that teachers are experiencing stress and that social support is a buffer in preventing stress and burnout (Koniarek & Dudek, 1996). Moreover, Lahiri (n.d.) asserted that, when school management recognizes the contribution teachers provide, this makes them feel valued and such feelings are likely to encourage them to give their best despite the manifold responsibilities. Furthermore, Park (2002, cited in Mayben, n.d.) described the ironic phenomenon among excellent teachers who are most prone to burnout, contending that passion for their profession can push them to take on a number of responsibilities that can potentially zap their energy in the long run. In Lamzon's study, given the reality of the multitasking role of practicum teachers (teaching, administrative, supervisory, networking) plus the limited financial resources for their supervisory functions that understandably leaves them overburdened and strained, they are actually experiencing cognitive overload and chronic stress. Thomas (2009) proposed that, because majority of today's workers have to self-manage by utilizing their know-how and experience in performing their tasks, they need to innovate and problem-solve to be able to succeed in their assigned task. He also theorized four intrinsic rewards associated with self-management, namely, sense of meaningfulness, sense of choice, sense of competence, and sense of progress.

Collaborating with stakeholders is essentially among the responsibilities of practicum teachers. The study of Hatcher and colleagues (2012) involving practicum site coordinators conveyed that the absence of a professional organization among external practicum sites was a concern. Fortunately, the same study revealed that most site coordinators manifested interest in opportunities to contribute or share their expertise to improve training. Moreover, the mutual payback gained by both the practicum student and the site illustrates that learning takes place in a social context. Specifically, Vygotsky's idea of scaffolding (Bold & Chenoweth, 2008) assumes that an individual's cognitive processes develop and improve with discussion and

consultation with others. In the practicum site, assistance of the site supervisor provides scaffolding in the form of mentoring, coaching, and supervision.

Practicum teachers appear to have adequate understanding of practicum supervision despite not having received any formal training for the role. Nevertheless, they particularly articulated that training is important and that they consider it a need. Generally, with no formal training in supervision, practicum teachers learned from their previous experiences of supervising students, and as they indicated, they kept improving as they accumulated experiences. Bernard (cited in Smith, 2009) stated that one's personal model of supervision keeps on improving and evolving as one reflects upon his/her experiences and gains insight. Also, Watkins (1997, cited in Mateo, 2010) remarked that, while counselor training is intensive, the opposite is true for the training of supervisors. If psychology students are expected to receive appropriate and excellent supervision while on practicum work, the psychology profession should require training programs.

Problems and Challenges: What Hasn't Quite Worked

"Busy and overburdened" are the words of Mateo (2010) for teachers of graduate practicum programs. And the teachers for undergraduate practicum spoke invariably about the challenge of time management. The implications include multiple roles, multitasking, and the teacher–student ratio that has been found less than ideal. On the other hand, stipulating a specific number of hours per site for at least two sites is also counterproductive on the part of the student who rushes to rack up hours and in the process misses out on optimal learning at the worksite. This is especially a problem when practicum is offered in the summer term—preparation and orientation require time, and many student applications are refused simply because particular institutions do not believe that practicum may be accomplished in such a short period.

Trust underlies placement of students in practicum sites. In majority of cases, universities are able to establish good working partnerships with institutions and agencies. However, some problems have been reported, including cases of sexual harassment and workplace exploitation that unfortunately supervisors are not made aware of except indirectly. In these cases, practicum teachers have simply pulled out their students and

severed ties with these practicum sites. Nevertheless, such cases illustrate some dangers students are exposed to, accepting reality in the workplace notwithstanding.

Inadequate supervision, including harmful supervision, has been a real problem in previous studies on clinical supervision. Such a problem may result from the lack of training in supervision of practicum teachers. Indeed, as has been pointed out, competence in supervision calls for adequate and formal training, and the current situation portrays the discrepancy between what professional organizations advocate and what is actually experienced by stakeholders in the delivery of supervision.

Best Practices: What Works

In as much as the status of practicum teaching that includes supervision leaves a lot of room for improvement, some points are worth considering, mainly in relation to the practicum subject itself, the practicum teacher, the academic institution, partner institutions, and relevant organizations.

First, because practicum aims to prepare students for the eventual practice of their profession in the different fields of psychology, it is imperative that the treatment of the subject be reviewed and look especially into what has worked. Specific areas to look into include the following: 1) the schedule or semester during which the subject is to be offered, taking into account the number of settings and hours that students are required to complete, 2) the ratio between the practicum teacher and students as well as students and the site supervisor such that maximum supervision and learning can be ensured, 3) the students' preparedness to take on practicum work, and 4) the practicum teacher's administrative and academic functions where some balance may be attained.

Meantime, the practicum teacher plays a crucial role in the practicum experiences of the students as he/she is very much involved in all the phases of practicum implementation. Given the lack of training in practicum teaching and supervision, it has been found that he/she is much helped by institutional support, including in-service training, financial support, and collegial assistance. Elsewhere, it has been suggested that a practicum coordinator is different from a practicum teacher. The appointment of a practicum coordinator frees up the practicum teacher from many

administrative responsibilities. The academic institution is crucial in this initiative.

Some provisions that have worked and should continue are the following: 1) providing for supervision-related functions such as site visits and liaison/networking; 2) training in supervision and continuing professional development, including wellness programs; 3) clear guidelines for site selection; 4) strengthening partnership and collaboration and improving the practicum program through reviewing expectations, feedbacking, conferences, dialogue, and transfer of technology; 5) continuing education among academic institutions and partner institutions with regard to policies and standards of government agencies and professional organizations; 6) sharing of research outputs and best practices with partner institutions; 7) assessment mechanism to determine relevance as well as pinpoint areas of improvement; and 8) a comprehensive practicum guide.

As partners of the academe and recipients of the academe's graduates, partner or host institutions have to work harmoniously with academic institutions. Specifically, it is beneficial if they also provide the following: 1) appropriate working environment (with needed facilities and equipment); 2) supervisor with appropriate credentials, knowledge, and skills; and 3) a clear program that supports the academic institution's practicum program.

It would be ideal if government institutions such as CHED and PRC strengthen their coordination in matters pertaining to policies and standards that affect academic institutions and their faculty and staff. In particular, CHED and PRC have to look into the following: 1) ensuring that policies and standards are adhered to by the stakeholders; 2) accrediting institutions/professional organizations offering courses and training in supervision; and 3) requiring HEIs offering graduate level courses to include supervision-related subjects in the curriculum.

In addition, the PAP, as the accredited integrated professional organization for psychology professionals, may consider the following: 1) taking initiatives to standardize the delivery of practicum supervision along with clinical supervision for better alignment with global standards; 2) specifying competencies needed for practicum supervision and clinical supervision to raise the standards of competence among would-be professionals and professionals, respectively; 3) having parallel standards in both practicum and clinical supervision so that future professionals are

better equipped; 4) offering seminar-workshops relative to supervision to better equip practicum teachers and site supervisors who are expected to train would-be professionals/practitioners; and 5) conducting activities that provide practicum teachers and coordinators the opportunity to share experiences and best practices.

The CHED, PRC, and PAP may continuously collaborate together for consistency, alignment, and clarity of policies and standards to promote common understanding among stakeholders. With the ASEAN integration, they may also look into clinical supervision among professionals and practitioners by spearheading initiatives to come up with a set of specific policies and standards to guide ethical practice. This is important not only because such initiatives will prepare individuals for the free flow of professionals across the global market but also because whatever is practiced in the professional/practitioner level will have a parallel effect on the lower level that includes both graduate and undergraduate students.

In sum, one of the best practices in practicum supervision begins with preparing practicum students well in advance of the practicum experience. Lamzon (2018) suggests course work that enables this readiness from the first to the third year of the psychology major's curriculum. By integrating immersion/exposure into each major subject, students may be able to crystallize which field of specialization they will be more interested in and will eventually pursue in their practicum/internship, and this will have more relevance in their future career. In addition, during the orientation period, there may be seminar-workshops to prime them for expected and unexpected experiences in actual work settings.

Because of the lack of course work and training for practicum teachers to prepare them for clinical supervision, they have been much dependent on the experiences and even documents handed down by former teachers of practicum. This would be a significant best practice—that previous teachers have actually documented their practicum supervision experience in a systematic and organized way. A practicum manual should ideally include the following: description of the practicum program, objectives, roles and responsibilities of stakeholders, policies, guidelines, procedures (e.g., placement, handling complaints, and addressing problems), activities (orientation, seminars), documents (MOA, letters), directory of linkages, grading and bases for evaluation, and other pertinent information. The

regular practice of weekly journals should continue as these help to anticipate or alleviate problems of students in the work setting as well as keep the academe and industry stay connected and updated.

Academic institutions may consider institutionalizing the practicum program to allow them to position the school in the larger context beyond the academe. This niche could be developed by identifying students' field of interest early on. Institutionalizing practicum will necessitate having an overall practicum coordinator whose main function is to oversee and manage all practicum-related concerns. An individual cumulative profile of a student's academic, personal–social, and career records has to be in place and periodically updated as bases for practicum and/or career direction. The practicum coordinator is also expected to coach and mentor practicum teachers who are directly responsible for the welfare of the students. Most importantly, particular attention should be given on the training of practicum teachers as it is critically important for the profession to thrive.

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Memory Retention and Retrieval in K–12 Spiral Progression Approach in Science: A Curriculum Issue Analysis

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Retrieval of students' prior knowledge, or memory, as needed to connect to the new lesson of higher complexity is oftentimes a problem encountered by teachers in the implementation of the K–12 Science curriculum using the spiral progression approach. Using the theoretical lenses of the intended curriculum considering J. Bruner's spiral curriculum model with the Integrated Model of Progression in Science as well as the multistore model of memory, implications regarding the implementation of the currently implemented curriculum are generalized, and a set of challenges are posed for all stakeholders in education in a way to strengthen and/or improve the new curricular reform of the country. Ensuring a meaningful and lifelong learning experience in the students through authentic performance tasks is important as it is associated with the long-term memory development of the learner that guarantees memory retrieval whenever it is needed. This is vital towards a more successful implementation of the spiral curriculum which remains to be a great challenge to all facilitators of learning — the teachers. This paper offers potential interventions for the teachers, the students, the school principal, the curriculum review committee, and the parents which will contribute to strengthening or improving the country's new curricular reform as well as its implementation aspect.

Keywords: Spiral Progression, Spiral Curriculum, Memory Retention and retrieval

INTRODUCTION

Rationale of the Study

One of the significant features in the new basic education curricular reform, the K–12 curriculum, is ensuring an integrated and seamless learning through spiral progression (Jugar, 2017) in Science and Mathematics disciplines. Focusing on Science, the concepts and skills in the four core domains of learning in Life Sciences, Physics, Chemistry, and Earth Sciences are presented in a spiral progression with increasing levels of complexity from Grades 3 to 10 which pave the way to a much deeper understanding of core concepts. This setup is quite different from the previous curriculum whereby students in the different year levels are taught in specific domains of learning, i.e., learning Earth Sciences in the freshmen year, Life Sciences in the sophomore year, Chemistry in the junior year, and Physics in the senior year or fourth year in high school. The spiral approach in Science in the new curricular reform that was officially launched in 2013 through the RA 10533 or the Enhanced Basic Education Act allows an integration of concepts across Science topics and other disciplines which is expected to lead to a more meaningful understanding of concepts and its application to real-life situations in the students (DepEd Curriculum Guide, 2016). This is one promising feature of the currently implemented curriculum. Oftentimes, however, it is a common scenario for teachers expressing concerns about not materializing their prepared instructional plans as intended due to having students without the necessary prerequisite knowledge to connect to the lesson at hand, thereby, affecting the instructional time and focus of the teacher. Then, it is a valid point to ask whether the spiral progression approach in Science teaching in the K–12 curriculum is effective as theoretically intended to result to understanding the concepts in depth and in breadth or, simply, that it is moving towards the opposite direction of having shallow learning considering the students' memory retention and memory retrieval issues. It is in this context that this study is done to analyze the implemented curriculum using some theoretical lenses to draw out significant interventions for the improvement of Science teaching and Science learning in general. This study is considered to be relevant

and timely since the K–12 Science curriculum is still in its early transition period and potential interventions can be articulated to do further fine tuning in Science teaching in full attainment of the primary aims of Science education, i.e., to develop Science literacy among the students which will prepare them to be informed and become participative citizens who can make informed judgments and decisions regarding the applications of scientific knowledge that are of social, health, or environmental impacts.

Specifically, this paper seeks to answer the following queries:

1. With Chemistry discipline as the point on case in the JHS-Science curriculum, are the provisions aligned with the intended curriculum in terms of its scope and sequence as well as the learning competencies using the Integrated Model of Progression in Science incorporating the spiral curriculum model of J. Bruner as theoretical lens?
2. With the Junior High School (JHS) K–12 Science curriculum using the spiral progression approach, what implications can be generalized in relation to memory retention of students and subsequent retrieval of prior knowledge using the multistore model with the working model of memory as theoretical lens?
3. What possible interventions can be done to strengthen the implementation of the spiral progression approach in teaching Science as practiced?

It is hoped that this paper will serve to inform all stakeholders in education (the learners, the teachers, the school administrators, the curriculum review committee, and the parents) towards a more successful endeavor in the implementation of the K–12 Science curriculum in the Philippines.

Review of Related Literature

The spiral progression approach, inspired by the spiral curriculum model of Jerome Bruner (1960), is described by Harden and Stamper (1999) to have an iterative revisiting of topics, subjects, or themes that are logically sequenced in successive levels of difficulty in which each return visit of the basic concepts brings (1) new knowledge or skill relating to the theme or

topic, (2) more advanced application of areas previously covered, and (3) an increased proficiency or expertise through further practical experience. Bruner (1960, cited in Harden & Stamper, 1999) proposed that spiral progression helps learners organize their knowledge, connect what they know, and master it and that teachers should make sure that, in preparing lessons, learners are able to revisit previously encountered topics. On the same vein, Corpus (n.d.) added that, as more facts and principles on each topic are encountered, students' understanding grows in breadth and depth creating a metaphorical spiral. As Kabara (1972, cited in Harden & Stamper, 1999) put it, spiral curriculum is like a spiral of information with productive repetition and constant reinforcement of learned skills and facts.

One may ask what triggers the shift in the curriculum in teaching Science and Math in the country from the usual disciplinal approach that involves teaching a specific area or domain by the grade level throughout the high school program in the old curriculum. The last participation of the Philippines in international surveys such as the 2003 Trends in International Math and Science Study (TIMSS) in the account of Marbella (2014) showed that the Philippines ranked 34th out of 38 countries in high school-II Math and 43rd out of 46 countries in high school-II Science, and for the Grade 4 level, the Philippines ranked 23rd of 25 participating countries in both Math and Science subjects. Additionally, based on the result involving only the science high schools in the country participating in the advanced Math category in TIMSS in 2008, the Philippines ranked lowest among 10 countries. This could be the triggering point for the shift to improve Science and Math proficiency among Filipino learners.

Corpus (n.d.) considered the spiral curriculum to be more advantageous compared to the traditional disciplinal approach in the old curriculum because of the integrative and multidisciplinary nature of teaching, thereby, ensuring a vertical articulation and seamless progression of competencies; the end result of which is mastery of concepts and improved retention. This account is supported in the argument of Herr as cited in Johnston (2012) that the reason of a stronger performance of students in Chinese schools can be attributed to their revisit of each of the basic sciences each year compared with that of students in some schools in the United States whose curriculum is "layered" that is, studying one

subject per year. Duncan (2009) stressed that learning progressions hold the promise of transforming Science education by providing better alignment between curriculum, instruction, and assessment. The aforementioned positive outcome of having the spiral progression approach in teaching Science and Math, as it is implemented in the Philippines in 2013, must be the main basis of the Department of Education to do the shift from the usual disciplinal or layered approach in the old curriculum to the spiral progression approach.

Resurreccion and Adanza (2015) noted, however, on the average that teachers in selected private and public high schools in Cavite devote less than 30 minutes of instructional time across an entire year to 70% of the topics and that many students fail to master important concepts because of the current curriculum in its first few years of implementation. Also, in the dissertation work of Hongcuay (2016), reservations of the teachers on the use of spiral progression approach have been noted. Firstly, ineffectiveness of the new setup is possible especially when students did not learn the intended concepts in the previous grade level leaving no choice for the teachers to do repeat teaching sessions (Bea in Hongcuay, 2016) which has an implication on the accomplishment of the expected coverage of topics and learning competencies within the quarter. Secondly, the new setup may lead to shallow understanding especially when the Science concepts are taught as chunks of different concepts and when there is no integration between Science disciplines from the previous learning to the current learning (Carl in Hongcuay, 2016) in every grading period, and throughout the whole course after all, these disciplines are then part of a big whole, which is Science (Anne in Hongcuay, 2016).

From the accounts mentioned above, the issue on students' memory retention and subsequent retrieval of information of their prior knowledge gained in the previous years is the main focus of this paper in relation to the implementation of the spiral progression approach in Science curriculum. Theoretical lenses are used to generalize implications for alignment and/or gap and to relate improved retention and mastery of concepts in the new approach used in teaching Science. Potential interventions to improve the implementation aspect can be deduced from the analysis.

Some theoretical lenses that are found relevant in the study include the following:

Theoretical Lens No. 1:
The Integrated Model of Progression in Science with Bruner's Spiral Curriculum Model

Below is the original account of Jerome Bruner in 1960:3–4 (cited in Braund, 2008) regarding spiral curriculum as the basis for the use of spiral progression approach in the K–12 Science curriculum:

> "I was struck by the fact that successful efforts to teach highly structured bodies of knowledge like Math, Physical Science, and even the field of History often took the form of a metaphoric spiral in which at some simple level a set of ideas or operations are introduced in a rather intuitive way and, once mastered in that spirit, were then revisited and reconstructed in a more formal and operational way, then being connected with other knowledge, the mastery at this stage then being carried one step higher to a new level of formal or operational rigor and to a broader level of abstraction and comprehensiveness. The end stage of this process was the eventual mastery of the connectivity and structure of a large body of knowledge."

Some key features in the model as depicted in the works of Johnston (2012) and Harden and Stamper (1999) include the following: (1) the topics are revisited several times throughout their school career, which for every visit, it can bring new knowledge or skill relating to the theme or topic; more advanced application of areas previously covered, and an increased proficiency or expertise through further practical experience; (2) the complexity of topics or themes increases; (3) new learning has a relationship with old learning and is put in context with the previous learning. The favorable outcome of which is increasing competence in the students. These aforementioned features are found incorporated in the Integrated Model of Progression in Science of Qualter et al. (1990, cited in Braund, 2008) with emphasis on a two-dimensional view of progression in Science learning, i.e., (1) being associated with the learning and understanding of concepts and (2) with the procedural understanding that is more on skills and process skills. These comprise the cognitive skills required to solve problems through practical activity (Gott & Dugan, 1995, cited in Braund, 2008), as illustrated in Fig. 1.

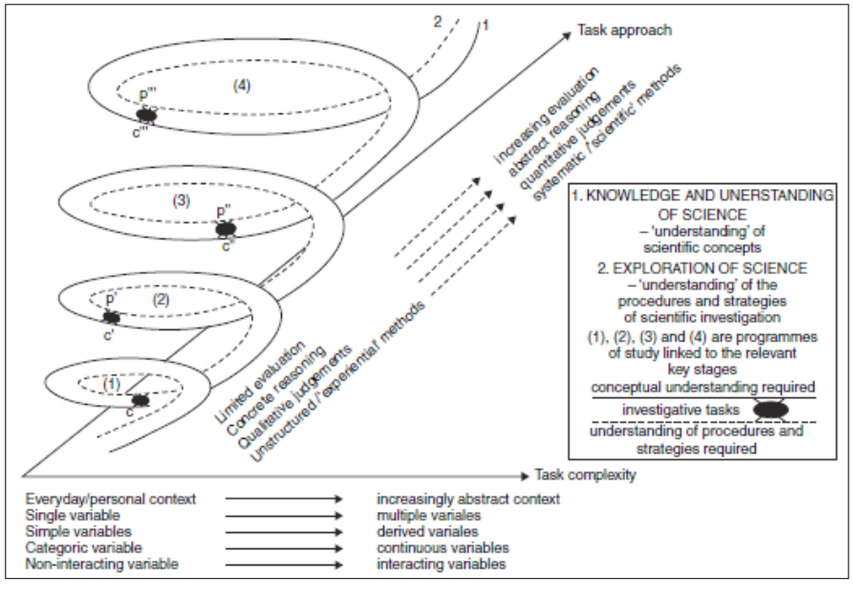

Figure 1. The Integrated Model of Progression in Science (Qualter et al., 1990:48, cited in Braund, 2008).

The model emphasizes on learning progression not just of conceptual understanding which includes the learners' ability to draw on the known facts, laws and theories of science, and models that have been devised to help explain a phenomenon to reach progressively more sophisticated levels of understanding of how the world works, but also the procedural understanding, that is, the thinking behind the doing relating to the skills and process skills in Science learning. Further, the model depicts four turns of a double spiral parallel to each other with each turn representing one of the key stages of the National Curriculum and that the two spirals representing conceptual (c) and procedural (p) understandings are linked by an 'experiential blob' representing practical experiences alluding to the fact that the level of the concept underpinning each investigation and the procedures necessary to carry out progress in terms of demand and complexity are in line with the content of the program of study for each key stage.

Specifically on the progression of process skills in procedural understanding, the literature adapted from Teacher Training Agency (2000b, cited in Braund, 2008) is found relevant in this paper as it proposes the following 'from–to' statements as inclusion on what to teach in the secondary

level to ensure that learners of ages 11–19 will have to progress, as follows:

- from understanding of accepted scientific knowledge in a few areas to understanding in a wide range of areas including, where relevant, the links between areas
- from describing events and simple phenomena to explaining events and more complex phenomena
- from explaining phenomena in terms of their own ideas to explaining phenomena in terms of accepted scientific ideas or models
- from a study of observable phenomena to increasing use of formal and generalized ideas
- from an essentially qualitative view of phenomena to, where appropriate, a more quantitative and mathematical view
- from seeing Science as a school activity to understanding the nature and impact of scientific and technological activity beyond the classroom
- from experiment and investigation involving simple scientific ideas to those in which
  - more complex scientific ideas may be drawn upon
  - more than one variable may be pertinent
  - decisions have to be made about strategies and instruments for data collection
  - data is interpreted and evaluated in terms of strengths and limitations

And considering the seven process skills identified by Harlen (1997, cited in Braund, 2008), the illustration in Table 1 below shows the from–to statements indicating process skills progression being classified based on five subthemes which are (1) seeking patterns and describing relationships in results, (2) identifying and explaining anomalous results, (3) appreciating and explaining the degree of reliability in findings, (4) relating predictions to outcomes and suggesting scope for further enquiry, and (5) explaining findings in terms of existing or developing scientific knowledge and understanding. This is found relevant in the discussion of spiral progression in the implementation of K–12 Science curriculum.

Table 1. *'From–to' statements for seven of the process skills in science.*

(From)	(To)
Observation	
• Describing objects, phenomena and events in some detail. • Understanding that human senses sometimes need assistance. • Making repeated observations to check results.	• Justifying why and saying how observations are made. • Choosing appropriate aids to make observations. • Linking quality and quantity of observations to concepts of evidence.
Measurement	
• Measurements of basic quantities (mass, length, time, volume, temperature). • Choosing equipment suitable for the type of measure to be made. • Reading major scale divisions.	• Repeated and accurate measures of basic and derived quantities (for example, velocity/rate). • Choosing the appropriate measuring range of a piece of equipment. • Reading minor scale divisions.
Predicting	
• Making a statement of based on limited expectation scientific reasoning. • Giving some idea of the sequence, order or magnitude of events or effects.	• Justifying predictions in terms of science ideas. • Using evidence to give reasoned predictions of the sequence, order or magnitude of events or effects.
Planning	
• Identifying some effect factors and realizing that one has to be changed while others are controlled.	Identifying most of the key factors that might have an effect. Selecting factors to control.
Recording and communicating (graphs)	
• Realizing when line graphs and bar graphs should be used. Constructing graphs with some help. • Beginning to decide on axes and scales for graphs.	• Constructing line graphs. • Choosing appropriate axes and scales for graphs.
Interpreting evidence	
• Recognizing simple trends and patterns in results.	Describing detailed patterns in results, for example, changes over time.
Evaluating evidence	
• Knowing when some results do not fit the pattern and beginning to wonder why. • Realizing that single results might not occur again. • Beginning to reflect on experimental design.	• Identifying and explaining anomalous results. • Linking reliability of findings to the spread of readings. • Linking reliability to experimental design where appropriate.

Source: Braund et al., 2004: 2–3.

The currently implemented K–12 Science curriculum based on the May 2016 edition will then be viewed using Theoretical Lens #1 on spiral curriculum and progression model, i.e., with (1) having a repetitive nature, (2)

with increasing level of complexity, and the emphasis on (3) whether there is an inclusion of progression of both the conceptual and procedural understanding stressed in the integrated model of progression.

Theoretical Lens No. 2

The Multistore Model of Memory with the Working Model of Memory in Relation to Memory Retention and Retrieval Mechanism

"Life without memory is no life at all. Our memory is our coherence, our reason, our feeling, even our action. Without it, we are nothing." The given statement was adapted from Bunuel (1983, cited in Mullally & Maguire, 2014). Learning the concepts and the process skills in science does require students' memory at work. It is the cerebral cortex, i.e., the outer layer of the cerebrum component of the human brain that is considered the seat of complex thought (Lewis, 2016) which in this paper can be related to the discussion on memory retention. In particular, the cerebral cortex consisting of four different lobes, it is the temporal lobe with the hippocampus and amygdala parts that play roles in the person's memory and emotion, respectively. As to the general mechanism of encoding of information, storing it, as well as the retrieval aspect of memory, it is illustrated in Fig. 2.

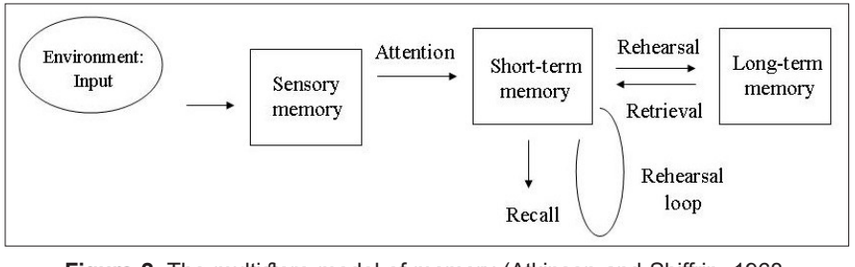

Figure 2. The multistore model of memory (Atkinson and Shiffrin, 1968, cited in Mcleod, 2007).

As shown, any information that is detected by the sense organs enters the sensory memory. With attention, the information gets processed, and this enters as an encoded message to the short-term memory (STM) storage which is accordingly transferred to the long-term memory (LTM) upon rehearsal or repetition of information (Atkinson & Shiffrin, 1968, cited in Mcleod, 2007). This information as LTM is known to last for a lifetime as shown in Table

2. Significantly, as depicted in the model, without the maintenance rehearsal (through repetition of information), the information is simply forgotten and lost from STM store through the process of displacement or decay. The model is of great significance in this paper to relate to memory retention of students as well as retrieval mechanism of information previously gained for further building up of knowledge in the higher grade level. Other than maintenance rehearsal is the recognition of elaborative rehearsal in the account of Shiffrin (2003, cited in Mcleod, 2007) in agreement to what was proposed by Baddeley and Hitch (1974, cited in Mcleod, 2007) in their working model of memory indicating that elaborative rehearsal also lead to a better recall of information. The key factor for better recall or retrieval of information is when there is more meaningful analysis that is involved, for example, images, thinking, and associations of information. And the use of visualization techniques and multimedia approaches in content delivery will facilitate minimal cognitive distraction and improved attention, thereby, promoting mastery of concepts and improved memory retention. Additionally, Baddeley and Hitch (1974, cited in Mcleod, 2007) indicated that motivation, effect, and strategy like having mnemonics are also being considered as factors that lead to long-term memory development.

On the other hand, it was also recognized that the role of rehearsal is not necessarily the only way to transfer information from STM to LTM store, that is, it is not the only way to let the memory lasting at the LTM storage. In fact, there are pieces of information or events that one could recall without any rehearsal at all, like swimming, yet unable to recall information which are being rehearsed, like reviewing one's notes for an examination (Mcleod, 2007).

Table 2 shows the distinction between STM and LTM in terms of encoding, storing, and its duration.

Table 2. *Distinction of the Memory-stores in relation to the multistore model of memory.*

Memory Stores	Characteristic Parameters		
	Encoding	Capacity	Duration
Sensory memory	Sense specific (e.g., different stores for each sense); all sensory experiences	(v. large capacity)	¼ to ½ second
Short-term memory (STM)	Mainly auditory	7 (+/–) 2 items	0–18 seconds

Long-term memory (LTM)	Mainly semantic (but can be visual and auditory)	Unlimited	Unlimited

Although both the short-term memory (STM) and long-term memory (LTM) are being regarded of equal importance in one's personal mental being, LTM will receive greater attention to be able to relate to the students' memory retention and retrieval mechanism in Science learning. It is thus important to take note on the taxonomy of LTM which is classified into different types, namely, the declarative (as explicit LTM) to which the episodic memory (i.e., memories of events) and semantic memory (i.e., memories of facts) belong and the nondeclarative (or implicit LTM) which includes the procedural memory (i.e., memories of skills and habits) and the simple classical conditioning (i.e., memories on emotional responses and skeletal musculature), among others in Squire and Zola-Morgan (1996, cited in Mullally & Maguire, 2014). This is depicted in Fig. 3.

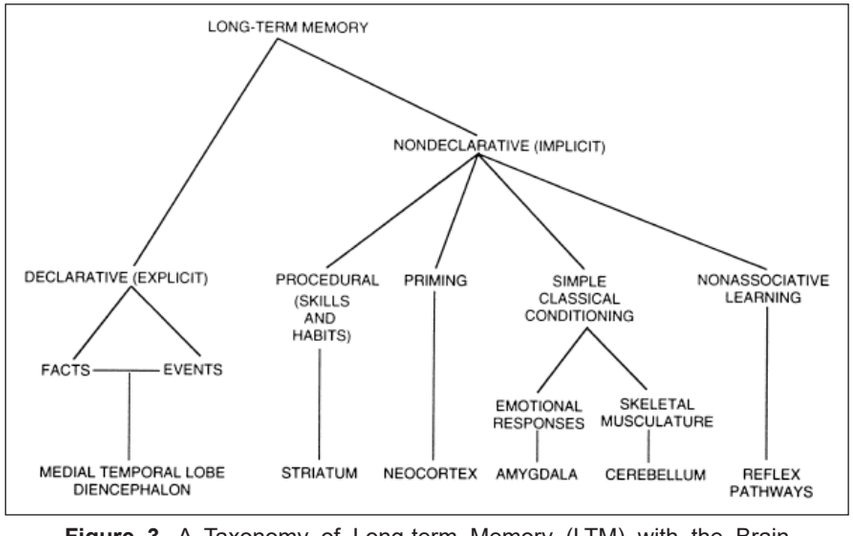

Figure 3. A Taxonomy of Long-term Memory (LTM) with the Brain Structures (adapted from Squire & Zola-Morgan, 1996, cited in Mullally & Maguire, 2014).

The general ways to facilitate transfer of STM to the LTM store as LTM, are the following: (1) the rehearsal factor — as maintenance or elaborative; (2) motivation based on a meaningful learning experience; (3) making consolidation of knowledge, i.e., establishing connections or making links of gained input; and

(4) the use of similes, metaphors, analogies, and other short mnemonics. All these can be helpful in improving memory retention which is associated with long-term memory development. It then appears that our brains are better at retaining information when it is structured, context-based, and goal-oriented. Additionally, it has been generalized in Nagi (2015) that, whenever feasible, visualization techniques and use of multimedia approach in content delivery are encouraged for use as they could help minimize cognitive distraction and, thus, improve retention. Furthermore, Immordino and Damasio (2007, cited in Nagi, 2015) indicated the importance of linking knowledge and reasoning with emotional implications and learning to establish meaning and motivation. This makes it become significant in the real world and, therefore, improve memory retention. These are for considerations to strengthen the implementation aspect of the K–12 Science curriculum.

The study habits of the learners as well as the teachers' current practices in facilitating Science learning with the students can be viewed through Theoretical Lens No. 2.

Theoretical Lenses 1 and 2 will be used to spot check for alignment and/or gap in the currently implemented curriculum, particularly in the study of matter (Chemistry discipline); to reconcile on some felt concerns in the implementation aspect of the spiral curriculum in Science, e.g., in the manifestation of students' inability to recall and relate prior knowledge as needed to link to the next lesson; and above all, to offer interventions based on some findings in this curriculum issue analysis to help in the implementation aspect of the five-year-old K–12 Science curriculum using the spiral progression approach in Science teaching in the country towards a more fruitful gain, i.e., to produce Filipino learners who are scientifically, technologically, and environmentally literate; one who is (1) a critical/creative problem solver, (2) a responsible steward of nature, (3) an innovative/inventive thinker, (4) an informed decision maker, and (5) an effective communicator (Department of Education, 2012, cited in Ferido, n.d.).

The Currently Implemented K–12 Science Curriculum

As stated in the conceptual framework of the K–12 Science curriculum (2016) that both the science content and science processes are being intertwined in the curriculum, this is theoretically consistent with the Integrated Model of Progression in Science by Qualter, et al. (1990, cited in Braund, 2008). It is

worthwhile to show the topic coverage, as well as the learning competencies in the study of matter (in Chemistry area) as reflected in the K–12 Science curriculum, May 2016 edition for the analysis aspect. Fig. 4 shows the topic coverage progression from Grades 7 to 10 in the Junior High School program.

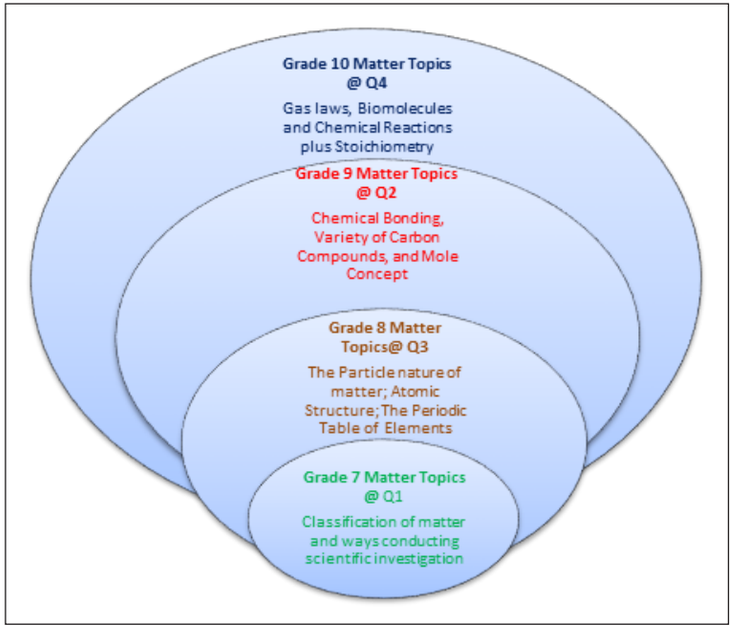

Figure 4. Sequence of Topics in Chemistry Discipline from Grades 7 to 10.

In terms of the grade-level topic-coverage from Grades 7 to 10, the degree of complexity of the topics increases with the topics in the upper grade level being highly connected with the ones at the lower grade level. From the topics depicted in Fig. 4, it would seem very difficult for the students to learn chemical reactions (as one of the topics in Grade 10) without the necessary prior knowledge on the atoms of elements in the periodic table (as a Grade-8 topic) and the chemical bond formation (as a Grade-9 topic), and the basic concepts about the atom in the study of complex molecules and its reactivity need to be revisited every now and then. The curriculum in the study of matter considering the detailed scope and sequence with the learning competencies will be viewed using the Integrated Model of Progression in Science. Table 3 shows the currently implemented curriculum based on the May 2016 edition

of the K–12 Science curriculum.

Table 3. *The K–12 Science Curriculum in the Study of Matter (Chemistry). (Lifted from the May 2016 ed. of K–12 Science Curriculum Guide)*

Scope and Sequence of Topics and Learning Competencies and the Time-table of Engagement from Grades 7 to 10
Grade 7 Matter at Quarter 1 Grade-level Std.: The learners can distinguish mixtures from substances through semiguided investigations. They realize the importance of air testing when conducting investigations. ***Topics:*** Doing Scientific Investigations 1. Ways of acquiring knowledge and solving problems; 2. Diversity of Materials in the Environment 2.1 Solutions 2.2 Substances and Mixtures 2.3 Elements and Compounds 2.4 Acids and Bases 2.5 Metals and Nonmetals ***Learning Competencies (LCs):*** *The learners should be able to...* 1. describe the components of a scientific investigation; 2. investigate properties of unsaturated or saturated solutions; 3. express concentrations of solutions quantitatively by preparing different concentrations of mixtures according to uses and availability of materials; 4. distinguish mixtures from substances based on a set of properties; 5. recognize that substances are classified into elements and compounds; 6. investigate properties of acidic and basic mixtures using natural indicators; and 7. describe some properties of metals and nonmetals such as luster, malleability, ductility, and conductivity.
Grade 8 Matter at Quarter 3 Grade-Level Std.: The learners can explain the behavior of matter in terms of the particles it is made of. They recognize that ingredients in food and medical products are made up of these particles and are absorbed by the body in the form of ions. **Topics:** 1. The Particle Nature of Matter 1.1 Elements, Compounds, and Mixtures 1.2 Atoms and Molecules 2. Atomic Structure 2.1 Protons 2.2 Neutrons 2.3 Electrons 3. Periodic Table (PT) of Elements 3.1 Development of the PT 3.2 Arrangement of elements 3.3 Reactive and nonreactive metals **Learning Competencies:** *The learners should be able to...* 1. explain the properties of solids, liquids, and gases based on the particle nature of matter; 2. explain physical changes in terms of the arrangement and motion of atoms and molecules; 3. determine the number of protons, neutrons, and electrons in a particular atom; 4. trace the development of the periodic table from observations based on similarities in properties of elements; and 5. use the periodic table to predict the chemical behavior of an element. **Performance Standard** The learners shall be able to present how water behaves in its different states within the water cycle

Grade 9 Matter at Quarter 2

Grade-Level Std.: The learners can explain how new materials are formed when atoms are rearranged. They recognize that a wide variety of useful compounds may arise from such rearrangements.

Topics:

1. Chemical Bonding
   1.1 Ionic and Covalent Bonding
   1.2 Metallic Bonding
2. The Variety of Carbon Compounds
   2.1 Carbon Atoms
   2.2 Organic Compounds
3. Mole Concept
   3.1 Mass
   3.2 Moles
   3.3 Percentage Composition of a Compound

Learning Competencies: *The learners should be able to…*

1. explain the formation of ionic and covalent bonds;
2. recognize different types of compounds (ionic or covalent) based on their properties such as melting point, hardness, polarity, and electrical and thermal conductivity;
3. explain properties of metals in terms of their structure;
4. explain how ions are formed;
5. explain how the structure of the carbon atom affects the type of bonds it forms;
6. recognize the general classes and uses of organic compounds;
7. use the mole concept to express mass of substances; and
8. determine the percentage composition of a compound given its chemical formula and vice versa.

Grade 10 Matter at Quarter 4

Grade-Level Standard: Learners can explain the importance of controlling the conditions under which a chemical reaction occurs. They recognize that cells and tissues of the human body are made up of water, a few kinds of ions, and biomolecules. These biomolecules may also be found in the food they eat.

Topics:

1. Gas Laws
   1.1 Kinetic Molecular Theory
   1.2 Volume, pressure, and temperature relationship
   1.3 Ideal gas law
2. Biomolecules
   2.1 Elements present in biomolecules
   2.2 Carbohydrates, lipids, proteins, and nucleic acids
      2.2.1 Food Labels
3. Chemical reactions

Learning Competencies: *The learners should be able to…*

1. investigate the relationship between:
   1.1 volume and pressure at constant temperature of a gas
   1.2 volume and temperature at constant pressure of a gas
   1.3 explains these relationships using the kinetic molecular theory
2. recognize the major categories of biomolecules such as carbohydrates, lipids, proteins, and nucleic acids;
3. apply the principles of conservation of mass to chemical reactions; and
4. explain how the factors affecting rates of chemical reactions are applied in food preservation and materials production, control of fire, pollution, and corrosion.

METHODOLOGY

Literature searches of relevant studies of both global and local contexts

pertaining to spiral curriculum, spiral progression approach, principles of memory retention, and how the brain works from academic and peer-reviewed journals, periodicals, and dissertation works were done to shed light on the points of queries as mentioned above. Then, using the latest curriculum guide of the Department of Education which is the May 2016 edition of the K–12 Science Curriculum Guide, the curriculum issue analysis was conducted. The analysis generally focused on the Chemistry area in the K–12 Science Curriculum Guide considering its scope and sequence of topics and learning competencies as well as the instructional time or period of engagement within the school year of Chemistry classes in the study of matter from Grades 7 to 10 seeing the actual implementation on the angle of memory retention of the students using two theoretical lenses. These are as follows: (1) the spiral curriculum model of Bruner (1960) as cited in Harden and Stamper (1999) with the Integrated Model of Progression in Science of Qualter et al., 1990 as cited in Braund (2008) and (2) the multistore model memory with the working model of memory of Atkinson and Shiffrin (1968) and Baddeley and Hitch (1974), which are cited in Mcleod (2007). The first one will be used to analyze alignment and/or gaps in the current curriculum intended to improve the curriculum while the second one is used to relate to memory retention and the subsequent retrieval of students' prior knowledge to reenforce mastery of concepts in a classroom scenario. Generalizations on implications and challenges were deduced necessary to plot potential intervention to have a favorable outcome in the implementation of the K–12 Science curriculum.

CURRICULUM ISSUE ANALYSIS

A. Viewing the Scope and Sequence of the Implemented K–12 Science Curriculum on Matter (or Chemistry Area) through Theoretical Lens #1

Considering the lens of the intended curriculum with the use of the original account of Jerome Bruner on spiral curriculum as incorporated in the Integrated Model of Progression in Science based on Qualter et al. (1990, cited in Braund, 2008), the currently implemented curriculum is found to be consistent with it in the following aspects: (1) there is an increasing level of

complexity in the topic-coverage as reflected in the learning competencies and (2) both conceptual understanding and procedural understanding are reflected to be intertwined in the grade level's learning competencies from Grades 7 to 10 in the study of matter. Table 4 shows the tabulated competencies that are labeled as conceptual (C) and procedural (P) understanding.

Table 4. *Classifying the Learning Competencies as either Conceptual or Procedural Understanding.*

Scope and Sequence of Topics and Learning Competencies and the Time-table of Engagement from Grades 7 to 10	**Remark** *(whether LCs falls under* ***Conceptual (C) or Procedural (P)*** *understanding based on the integrated model of progression as Lens 1)*
Grade 7 Matter at Quarter 1	
Grade-level Std.: The learners can distinguish mixtures from substances through semiguided investigations. They realize the importance of air testing when conducting investigations.	
Learning Competencies (LCs): *The learners should be able to…*	
1. describe the components of a scientific investigation;	C
2. investigate properties of unsaturated or saturated solutions;	P
3. express concentrations of solutions quantitatively by preparing different concentrations of mixtures according to uses and availability of materials;	P
4. distinguish mixtures from substances based on a set of properties;	C
5. recognize that substances are classified into elements and compounds;	C
6. investigate properties of acidic and basic mixtures using natural indicators; and	P
7. describe some properties of metals and nonmetals such as luster, malleability, ductility, and conductivity.	C
Grade 8 Matter at Quarter 3	
Grade-Level Std.: The learners can explain the behavior of matter in terms of the particles it is made of. They recognize that ingredients in food and medical products are made up of these particles and are absorbed by the body in the form of ions.	
Learning Competencies: *The learners should be able to…*	
1. explain the properties of solids, liquids, and gases based on the particle nature of matter;	C
2. explain physical changes in terms of the arrangement and motion of atoms and molecules;	C
3. determine the number of protons, neutrons, and electrons in a particular atom;	C
4. trace the development of the periodic table from observations based on similarities in properties of elements; and	C
5. use the periodic table to predict the chemical behavior of an element.	C
Performance Standard: The learners shall be able to present how water behaves in its different states within the water cycle	*P
Grade 9 Matter at Quarter 2	
Grade-Level Std.: The learners can explain how new materials are formed when atoms are rearranged. They recognize that a wide variety of useful compounds may arise from such rearrangements.	
Learning Competencies: *The learners should be able to…*	
1. explain the formation of ionic and covalent bonds;	C
2. recognize different types of compounds (ionic or covalent) based on their properties such as melting point, hardness, polarity, and electrical and thermal conductivity;	C
3. explain properties of metals in terms of their structure;	C
4. explain how ions are formed;	C
5. explain how the structure of the carbon atom affects the type of bonds it forms;	C
6. recognize the general classes and uses of organic compounds;	C
7. use the mole concept to express mass of substances; and	P
8. determine the percentage composition of a compound given its chemical formula and vice versa.	P
Grade 10 Matter at Quarter 4	
Grade-Level Standard: Learners can explain the importance of controlling the conditions under which a chemical reaction occurs. They recognize that cells and tissues of the human body are made up of water, a few kinds of ions, and biomolecules. These biomolecules may also be found in the food they eat.	
Learning Competencies: *The learners should be able to…*	
1. investigate the relationship between: 1.1 volume and pressure at constant temperature of a gas 1.2 volume and temperature at constant pressure of a gas 1.3 explains these relationships using the kinetic molecular theory	P
2. recognize the major categories of biomolecules such as carbohydrates, lipids, proteins, and nucleic acids;	C

3. apply the principles of conservation of mass to chemical reactions; and	P
4. explain how the factors affecting rates of chemical reactions are applied in food preservation and materials production, control of fire, pollution, and corrosion.	C

As shown in the learning competencies throughout the Junior High School program, there appeared to be more learning competencies, about 71% (or 17 out of 24) that are related to conceptual understanding and 29% (or 7 out of 24) that are related to procedural understanding. This finding indicates that Filipino students are taught more on the content or being introduced to more conceptual understanding. Further, although the competencies stated in the Grade 8 level are noted to be all for the development of conceptual understanding because of theory-based topics in the study of the particulate nature of matter, the atomic structure, and the periodicity of elements in the periodic table, the indicated performance standard as reflected in the curriculum guide reflects a procedural understanding development. Requiring the learners to present how water behaves in its different states within the water cycle entails the necessary procedural and higher order thinking skills.

In another angle, the process skills from Grades 7 to 10 cannot be generalized to be of the same progression in terms of degree of complexity as that of the specified from–to statements as shown previously in Table 1. It is worth noting also that the progression based on the seven process skills mentioned by Harlen (1997, cited in Braund, 2008) from Grades 7 to Grade 10 is not explicitly shown in the stated learning competencies in terms of the terminologies used like observing, measuring, predicting, planning, recording and communicating graphs, interpreting evidence, and evaluating evidence. However, this does not necessarily mean that the teachers are not incorporating such process skills development in their Science teaching. On the same vein, the spiral progression approach as used in the currently implemented curriculum seemed to be silent in terms of progression of 'process skills' in science based on the five subthemes which include the following: (1) seeking patterns and describing relationships in results, (2) identifying and explaining anomalous results, (3) appreciating and explaining the degree of reliability in findings, (4) relating predictions to outcomes and suggesting scope for further enquiry, and (5) explaining findings in terms of existing or developing scientific knowledge and understanding. Discussion

of these things is relevant in this analysis as it bears implications towards the improvement of the curriculum, as well as for the improvement of Science teaching. Since teachers are expected to develop the cognitive skills of the students to solve problems in the real world, then it should be both the science content and science processes that are to be taught among students. In training high school students to do research works, for example, like in the making of science investigatory projects, the cognitive skills are highly valuable. In fact, as noted from the listed learning competencies in Table 4, three of the seven competencies identified as procedural understanding are all related to making investigations. Therefore, the 'from–to' input on process skills progression in Table 1 is considered important among the teachers and the curriculum development and review committee. This is considered as one of the challenges in the implementation aspect of the spiral progression approach.

Regarding the spiral progression approach in teaching Chemistry in the current curriculum as reflected in the learning competencies from Grades 7 to 10 in Table 4, the Grade 7 learning competency number 5 (VII-LC#5) can be connected with deepened learning to VIII-LC #1, then to IX-LC#1, and eventually to X-LC#1 in the study of water classified as a substance (as knowledge gained in Grade 7); as a molecule that consists of 1-Hydrogen atom and 2-Oxygen atoms with each of the component atoms having a specific number of subatomic particles, i.e., the electrons in the different orbitals and shells while the protons and neutrons are found in the nucleus of an atom (as knowledge gained in Grade 8); and that the H and O atoms establish a covalent bond being both nonmetals to form a covalent molecule with a chemical formula, H2O which can be quantified in terms of percent Hydrogen composition and percent Oxygen composition in definite proportion (as knowledge gained in Grade 9); and knowing about the effects of changes in temperature and pressure changes on the gaseous water molecule which can be related to real-life experiences like cooking with the use of a pressure cooker relating to Kinetic Molecular Theory (as knowledge expected in Grade 10). Please see Fig. 5 to visualize the spiral progression approach in action in the study of water, for example, from Grades 7 to 10, in which it is the teacher who facilitates the making of connection of prior learning to the current lesson that goes spiraling in terms of level of complexity and degree of difficulty as one goes up to the next

grade level. The teacher reconsolidates information to achieve meaningful learning experiences in the students that consequently leads to a lasting and meaningful learning among them.

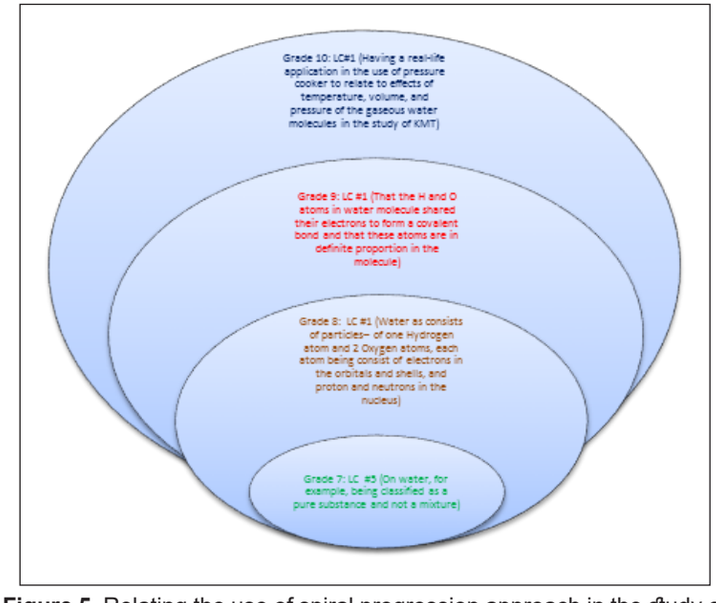

Figure 5. Relating the use of spiral progression approach in the study of water based on the expected learning of students from Grades 7 to 10.

Furthermore, although there is no clear indication that the basic concepts are revisited in each turn of the spiral, this does not necessarily mean that the teachers do not get back to the basic of things based on the previously learned and understood concepts and process skills in the lower grade level. Science teachers have that basic instincts to dig up information from previously learned concepts in order to connect to the new lesson; although, this also depends on the teacher's preparation factor in terms of pedagogical content knowledge. With the students' active role in the learning process and with the teachers' mindful facilitation of learning through eliciting prior knowledge and letting the students revisit some basic concepts, there can be more connection of things, thereby, maximizing learning in the students. Otherwise, repeat teaching sessions would be needed in cases that the majority (or all) of the students missed the important link towards the lesson at hand. The given scenario relates to memory retention and retrieval

of information concern of the learners which is also related to their study habits and significantly on how Science instruction is delivered to them.

Science teaching is expected to enforce improved memory retention and mastery of concepts in the learners. To do this is to learn Science concepts and skills not in chunks but by linking these to the new knowledge and by consolidating these throughout the whole course or program (Mcleod, 2007). Otherwise, the foundation of learning is weak, and that information will not stick in the long-term memory store. Simply put, information becomes easily forgotten. Consolidation is the term attributed to the hypothetical transformation of a memory trace from an unstable short-term memory to a stable long-term memory (Nagi, 2015). It can be generalized, then, that the challenge for improved retention and mastery of concepts in the students lies greatly on the teachers as facilitators of learning; however, this does not negate also the responsibility of the learners for maximized learning from their end.

B. Viewing the Time-element of Science Instruction from Grades 7–10 and relating this to Memory Retention and Retrieval using Theoretical Lens No. 2

Considering that Science is learned together with the other disciplines including Math; English; Filipino; Social Studies; TLE; Music, Arts, PE, and Health or MAPEH; and Values Education and considering as well that the four domains or areas in Science are being distributed each in the different quarters of the school year period, plus the students' engagement to cocurricular and extracurricular activities in the school, there can be a great possibility for students to forget important concepts in class. This can affect building up of knowledge in the next grade level to learn the same area of Science, Chemistry, for example. This situation, without any intervention, would cause further negative outcome, in ripple effect, towards learning the next higher level competencies in the succeeding grade level in the currently implemented curriculum. And this generally results to noncoverage of the whole set of lessons expected in the grade level because of repeat teaching session by the teacher to make connections of concepts to the lessons at hand.

Theoretical Lens #2 using the multistore model of memory of Atkinson

and Shiffrin (1968, cited in Mcleod, 2007) depicted forgetfulness as a fact of life. This is one reason why teachers only cover a portion of the whole set of competencies in the grading period with the students not mastering some important concepts as related in the account of Resurreccion and Adanza (2015). The multistore model, together with the working model of memory, indicates the importance of maintenance and elaborative rehearsal, plus the motivation and effect strategy to facilitate the transfer of short-term memory (STM) information to the long-term memory (LTM) storage as a LTM with which the information can last a lifetime as reflected previously in Table 2. The crucial aspect of consideration about improved memory retention is the provision of meaningful learning experiences. Understanding big ideas and performance of authentic tasks related to a particular lesson in Science can lead to transfer of learning in the students, and this is associated with long-term memory. When students acquire meaningful learning experience in school or perhaps acquire learning the hardest way, involving an extreme level of emotions of happiness and/or sadness, the gained learning input in this sense becomes more sticking to the brain as long-term memory (which is lifetime). This has implication to retrieval of prior knowledge as needed to bridge to the new learning in a spiral progression approach. Ensuring learning to be more enduring and meaningful is another challenge that teachers must consider to strengthen the implementation of the spiral curriculum.

C. Viewing the Spiral Progression approach features in terms of the long-term memory development in the multistore model of memory

Repetition of information as one important feature in the spiral curriculum has been proposed to improve normal retention and retrieval processes of information (Nagi, 2015). The above description showed consistency with the process of developing the long-term memory in the multistore model of memory of Atkinson and Shiffrin (1968, in Mcleod, 2007). The law of exercise, as one of the conditions to maximize learning, in addition to the law of readiness and law of effect of Edward L. Thorndike (1874–1949), is found aligned with the repetitive nature to revisit basic concepts in learning the higher competencies in the spiral progression approach in teaching

Science. For example, students need to study by reading once, twice, or thrice and may write down notes and study the jotted summarized notes once, twice, or thrice, and may associate the concepts understudied with images, sound, or certain facts and events, and also to be more religious in doing practice exercises of problem-solving items, and he/she/they will surely gain an improved memory retention, i.e., mastery of concepts and skills, via the law of exercise or rehearsal (i.e., law of repetition of information or action). In fact, doing rehearsals, may it be mentally or physically for psychomotor development, will lead to long-term memory development. Theoretically, it can be generalized that undertaking the spiral curriculum in Science in the year 2012 is considered an intelligent decision of the Department of Education (DepEd) to increase Science proficiency in the Philippines, i.e., improved memory retention and retrieval of information. However, the challenge is always on the implementation aspect.

Relating to the Department of Education (DepEd) guidelines on the assessment and rating of learning outcomes (DepEd Order 73, 2012) in the implementation of the K–12 Science curriculum, the rationale behind the given weights in the grade for Knowledge, Process, Understandings, and Product/Performances which are 15%, 25%, 30%, and another 30%, respectively, must be that it ensures meaningful learning experiences in the learner in the K–12 Science curriculum. The DepEd defines knowledge level to refer to facts and information that the student acquires; process level, as skills or cognitive operations that the student performs on facts and information for the purpose of constructing meanings or understandings; understanding level, as the enduring big ideas, principles, and generalizations inherent to the discipline which may be assessed using the facets of understanding or other indicators of understanding which may be specific to the discipline; and products/performances, as the real-life application of understanding as evidenced by the students' performance of authentic tasks. The 21st century learners are then assessed, not on mere rote memory, but also on authentic tasks performances that is even given a much greater weight.

Table 5 summarizes the curriculum analysis using the theoretical lenses with its implications to the issue on memory retention and subsequent retrieval in the context of Science teaching and learning.

Table 5. *Summary of Findings with Implications of K–12 Science Spiral Curriculum using the Theoretical Lenses.*

Theoretical Lens	Description	Significant Findings	Implications
#1 The Integrated Model of Progression in Science with Bruner's Spiral Curriculum model	The Integrated Model of Progression in Science emphasizes on two-dimensional view of progression in Science learning, i.e., (1) being associated with the learning and understanding of concepts and (2) with the procedural understanding that is more on skills and process skills. Bruner's model relates (1) that the topics are revisited several times throughout the students' school career, which for every visit, it can bring new knowledge or skill relating to the theme or topic; more advanced application of areas previously covered; and an increased proficiency or expertise through further practical experience; (2) the complexity of topics or themes increases; and (3) new learning has a relationship with old learning and is put in context with the previous learning.	▪ Both the conceptual and procedural understanding are reflected to be intertwined in the grade level's learning competencies from Grades 7 to 10 in the study of matter, with about 71% (or 17 out of 24) that are related to conceptual understanding development and 29% (or 7 out of 24) that are being related to procedural understanding; ▪ There is a manifestation of increasing level of complexity in the topic-coverage as reflected in the learning competencies of the K–12 Science curriculum; and ▪ The Science topics in the upper grade level are related in context with the previous ones.	With consideration of having both the conceptual and procedural understanding developed in the K–12 spiral curriculum in Science as reflected in the learning competencies would mean that the implemented curriculum itself is not remissed at providing opportunities for lifelong learning experiences to the students. This shows that Science content and Science processes are intertwined in the K–12 curriculum which allows learning of Science process skills be learned in context. ▪ The Chemistry topics, for example, are expected to be revisited as one goes up in the academic ladder from Grades 7–10, and this is within the facilitating power of the Science teachers.
#2 Theoretical Lens #2 using the multistore model of memory of Atkinson and Shiffrin (1968, cited in Mcleod, 2007)	The multistore model, together with the working-model of memory indicates the importance of maintenance and elaborative rehearsal, plus the motivation and effect strategy to facilitate the transfer of short-term memory (STM) information to the long-term memory (LTM) storage	As reflected in the related studies, the instructional time and scope of lesson coverage is somehow affected with the implementation of K–12 spiral curriculum in Science. ▪ Resurreccion and Adanza (2015) showed that teachers in selected private and public high schools in Cavite devoted less than 30 minutes of instructional time across an entire year to 70% of the topics and that many students fail to master important concepts;	Having these observations that are not so favorable with the implementation would mean that there is something that needs to be done to enforce learning with the K–12 spiral curriculum in Science. Teachers need to facilitate learning in a way to result to a meaningful and lifelong learning; one that would ensure long-term memory development for a subsequent retrieval of information deemed needed to scaffold or connect to the lesson at hand.

The overall outcome of this theoretical analysis of the curriculum is for the increased proficiency in Science in the long run of implementation. To the query on why take the shift from the disciplinal approach to the spiral progression approach, the answer then lies on long-term memory development that is catered through the repetitive action (of going back to the basic concepts with a deepened and widened understanding of new knowledge that is related to the same subject matter or theme) in a spiral progression approach, plus the fact on the consolidating aspect of knowledge that allows transfer of STM to LTM storage as a retrievable LTM, thereby facilitating learning with increased proficiency in Science.

From the analysis using the theoretical lenses, it is clear that the spiral curriculum offers a great potential and opportunity for increased proficiency in Science. However, it is on the implementation aspect especially on the facilitation roles of the Science teachers that remains a great challenge to make Science learning more motivating, enjoyable, and more meaningful

and lifelong that it would yield to real-life application of Science concepts and Science process skills. Immordino and Damasio's (2007, cited in Nagi, 2015) argument regarding the vitality of linking knowledge and reasoning with emotional implications and learning to establish meaning and motivation is strengthened in this curriculum issue analysis. This makes it become significant in the real world and therefore improves memory retention. These are for considerations to reinforce the implementation aspect of the K–12 Science curriculum.

CONCLUSION

With Chemistry as the point on case in the Junior High School Science curriculum using the spiral progression approach following J. Bruner's spiral curriculum model (with its repetitive feature of getting back to the basic concepts or skills that are arranged logically in successive levels of complexity from a lower-to-higher grade level), in itself, the implemented curriculum provides opportunities for improved retention and mastery of concepts as depicted in the multistore model of memory in the process of long-term memory development which paves the way for deepened and meaningful learning experiences of students. Theoretically, the spiral curriculum is a promising curriculum undertaken for Philippine education, however, a number of things were needed to be done in the implementation to include open-communication and close coordination among stakeholders, as well as personal open-mindedness to undertake some control measures to maximize learning in the students and be able to reap the best harvest of favorable outcomes in the use of Spiral progression approach in Science.

The use of theoretical lenses of the intended curriculum helped in visualizing some interventions that can be done in order to strengthen and improve the implementation of the new curricular reform in the country. The teachers' role to facilitate learning among the students in a more meaningful and integrative way is considered crucial and the most challenging aspect in the implementation of the K–12 spiral curriculum in Science which potentially improves students' memory retention and subsequent retrieval of information in Science learning.

IMPLICATIONS AND CHALLENGES

For the Teachers

The following are for consideration by the teachers being facilitators of learning in a spiral progression approach in teaching Science, as follows:

1. *Progression of procedural understanding (i.e., of skills and process skills)*
   The teachers need to consider the 'from–to' statements on progression of the procedural understanding (i.e., the process skills in Science) proposed in Braund (2008) especially in the aspect of students' investigative works in Science like their research undertaking with Science investigatory projects. For example, in evaluating evidence, the students need to progress from knowing when some results do not fit in the pattern and from beginning to wonder why to identifying and explaining anomalous results; and from realizing that single results might not occur again to linking reliability of findings to the spread of readings.

2. *Ensuring students to connect prior knowledge to the lessons at hand*
   Teachers should make sure that, in preparing lessons, students are able to revisit previously encountered topics. This is to establish a link of the students' prior knowledge to his/her new learning in order to build up a more meaningful and integrated learning in the students. Otherwise, learning can become shallow, in the form of chunks which can lead into junks (i.e., being wasted or undergoing decay as a short-term memory due to lack of connection).

3. *Making the Science road map of learning visible to all, and walking through it*
   Considering the limitation of time to cover the lessons in the whole quarter as a continuation of the previous grade level's competencies and with the students' heavy study load in Junior High School, it would be good for the teachers handling each of the Science classes in the four Science areas from Grades 7–10 to have a curriculum map of the whole Junior High School Science program to be posted on the wall, visible to all, to ensure easy tracking of the lessons, and this will facilitate connectivity and integration of learning of the lessons that are placed vertically along the different grade

levels and horizontally across other Science areas in the grade level. In this manner, there will be a deepened and richer breadth of understanding of the concepts and process skills.

4. *Assessing students with authentic performance tasks and with the use of Higher-Order Thinking Skills (H-O-T-S)* to affect more meaningful learning and, therefore, lasting memory and accessible retrieval or recall of information.

5. *Motivational factor of the teachers can positively affect memory retention in the students.*

6. *Using visualization technique like the multimedia approaches in content delivery can enforce memory retention.*

7. *Consideration of the Primacy and Recency Effect in facilitating learning* (for example, letting the students express what they learn in class before dismissal time will lead to a more lasting learning, and at the same time, the teacher can have an opportunity to affirm and or edit student's learned concepts).

8. *Facilitating in class Experiential learning approaches and Problem-based learning* that match with the learner's cognitive ability to make learning more valuable.

9. *Cultivating in the learners the scientific attitudes and values* that will also contribute to long-term memory development since emotional responses are put to work. There is no mention about development of scientific attitudes and values in the K–12 Science Curriculum Guide. This must not be forgotten.

For the Students

Each learner is said to be a potential genius, however, no good students can survive the demands and tests without possessing good study habits that can be acquired or developed through the law of exercise of Thorndike and the rehearsal factor in the multistore model of memory for LTM development.

For example, religiously answering practice exercises, religiously summarizing notes of learned concepts in class, reading, reflecting, doing constant physical exercises, and doing constant practicing especially with developing the psychomotor skills like playing a musical instrument and dancing, all these, reinforce for long-term memory development and, therefore, improved retention. Important concepts gained in school might just be simply forgotten especially the short-term memory. Repetition of good study practices would lead to a good study habit which is a highly sustainable way to surviving and surpassing school challenges.

Significantly, repeated utterance of unfavorable and spoiled language and repeated remembrance of any bad motif of intention towards somebody will not do any good to the person. By virtue of the multistore model, the information from STM can transfer to LTM store and so, with constant repetition of negative/bad words, thoughts, or feelings, will lead to a lingering memory and can lead to potential harm. On the light side, overwhelming oneself with good thoughts, good and healthy lifestyle practices, and kind and grateful words will always lead to a positive outcome that will benefit not only the person, but also the nearest environ.

For the school administration like the School Principal and the Science Coordinator

It is noteworthy to have a constant and regular monitoring of the implementation of the curriculum and confer with the teachers as the main implementers, listen to their concerns, and above all, motivate and inspire them at work and to push for constant review and upgrading of the curriculum that would incorporate the relevant needs of the learners.

For the Curriculum Review Committee

It is very important to revisit regularly the provisions in the new curricular reform together with the principal and the teachers and representatives of all stakeholders like the student body, the parents, and the alumni to do review sessions and upgrade the curriculum based on the needs of the learners.

For the Parents

It is for them to make a follow-through of their children's undertaking in school in terms of making school requirements at home like assignments and practice exercises and for good study habits. Practice makes perfect in problem-solving situations, and this has theoretical basis; the long-term memory development in the child through rehearsal, maintenance or elaborative, and motivation and strategy.

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Assessing Willingness to Pay for Conservation of Endangered Species and Habitats Using Two Payment Vehicles in Contingent Valuation Survey: A Case for Northwest Panay Peninsula, Philippines

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The study aimed to determine the effects of payment vehicles in contingent valuation surveys for conserving endangered species and habitats of Northwest Panay Peninsula Natural Park (NWPPNP), Philippines. Results showed that income was found to be significantly affecting WTP in all data set regressions across two payment vehicles: residence certificate or cedula (CED) and surcharge on electric bill (ELEC), and is positively signed. Familiarity with endangered species is also positively affecting willingness to pay (WTP) of CED respondents but not on ELEC respondents. On the other hand, WTPYr or bid price is not significantly affecting CED respondents but significantly affecting ELEC respondents. This means that regardless of bidprice, still less CED respondents were not willing to pay for the conservation of endangered species and habitats of NPP while for ELEC respondents as bid price increases, less were willing to pay for the conservation thereby confirming the law of demand. This study documented and found that in rurban San Jose Antique and Kalibo, Aklan, people have high level of awareness of the importance of endangered species conservation. However, when asked for specific (monetary) commitment, the majority was unwilling or noncommittal. Based on the dichotomous choice contingent valuation method survey, results confirm the low WTP of respondents since only up to 14 percent were willing to pay for the hypothesized conservation fund for NWPPNP's endangered species and habitats. This is almost the same portion as those who were willing to pay through either of the payment vehicle groupings.

Keywords: Contingent valuation, payment vehicles, endangered species, willingness to pay, Northwest Panay Peninsula Natural Park

INTRODUCTION

Sprawling across the municipalities of Nabas, Malay and Buruanga in Aklan province and the municipalities of Libertad and Pandan in Antique province, the Northwest Panay Peninsula is a recognized important bird area and still has significant stands of primary, low elevation rainforest that are valuable as gene banks for rehabilitation of deforested areas in the entire region of Western Visayas (Curio 2003; PhilinCon 2018).

Vis-à-vis the Northwest Panay Peninsula Natural Park's (NWPPNP) gargantuan potential for its biodiversity richness, various problems and threats underscore the need for conserving the species and habitats at the Northwest Panay Peninsula. During the October 15, 2002 meeting by the Northwest Panay Biodiversity Management Council, all Council members participated in the Advocacy Agenda Formulation workshop and identified several threats to the existence and conservation of the NWPPNP. Among these were: mining interests in the site, timber poaching, slash and burn farming, illegal settlement, wildlife collection, and bioprospecting (Foundation for the Philippine Environment, 2019).

Considering these threats, conserving the NWPPNP will not be an easy task. The conservation efforts that Philippine Endangered Species Conservation Project (PESCP) and Biodiversity Conservation Trust of the Philippines, Inc (BIOCON) have embarked on in the past several years include having the following efforts and actions (PanayCon, 2013): (1) forest ranger patrols, (2) confiscation, rehabilitation, and release of wildlife that had been illegally caught and domesticated, (3) community organizing, introduction of alternative livelihood like agroforestry for communities affected by the protected area establishment and (4) conservation related research.

Sustaining and more so improving these conservation efforts will require resources, particularly funding. The government has very minimal expenditures yet on conserving the area because most of the costs incurred were shouldered by PESCP and BIOCON, which in turn obtained funding from other agencies and donors. The value of NWPPNP ecosystems for humans and local economy is often underestimated as compared to the value of timber, meat and other products gained by its short-term exploitation and destruction (PhilinCon 2018).

This study aimed to determine if the NWPPNP is valuable to citizens, and whether potential economic values for conserving it can cover the costs

of conservation. This study also provides information on how residents of the Aklan and Antique provinces value the endangered species and habitats in NWPPNP through their willingness to pay for their conservation. Two payments vehicles were employed to test if there were significant difference in willingness to pay (WTP) response for contingent valuation surveys. The results of this study can provide inputs in exploring alternative sources of financing the conservation program.

Contingent Valuation and its Validity

Endangered species generate considerable benefits and services to society, many of which is rarely reflected in the market (Innes and Frisvold, 2009). Because these public services are rarely bought and sold on the auction block, they never enter into private markets and thus remain unpriced. The economic value of threatened and endangered species are difficult to estimate (Amuakwa-Mensah et al., 2018; Pandit et al., 2015), thus it is therefore a great challenge is to quantify their value in monetary terms. In the case of placing monetary value on environmental "goods" like endangered species conservation, contingent valuation is the most popular and widely used method.

The contingent valuation method (CVM) estimates the economic value of environmental goods by placing survey respondents in a hypothetical market setting created for a particular species or group of species (Kontogianni et al., 2012; Richardson and Loomis, 2011; Zander et al. 2014) and asking them their willingness to pay (WTP) to either avoid the total loss of a population or increase the population size.

CVM has been the main approach used on the studies on threatened species and endangered communities (Pandit et al., 2015). Most studies focused on calculating the economic value of a single species such as charismatic and flagship species as bald eagles *(Haliaeetus leucocephalus)* or loggerhead sea turtles *(Caretta caretta)*. Diffendorfer et al, 2014 used CVM to value insects particularly the monarch butterfly *(Danaus plexippus)*. Some studies were designed to determine the economic benefits of several species at all once. Boxall et al. (2012) computed WTP estimates for the recovery of three marine mammals — the beluga whale, the blue whale and the harbor seal that were indicators of the health of the St. Lawrence Estuary in Canada. On the other hand, Yao et al. (2014) studied the enhancement of biodiversity from four different classes, that is birds, fish, reptiles and plants in the forest of New Zealand. Zander et al.

(2014) conducted a CVM study to explore funding support for threatened bird conservation in Australia and found out that more than half of the respondents were willing to pay into a fund for bird conservation. Each respondent on the average, was willing to pay an amount of AU$11/year which is equivalent to social willingness to pay of AU$14 million/year for threatened Australian birds when extrapolated to the Australian population as a whole.

Various studies on nonmarket values of threatened species are sensitive to changes in size of species population, the types of species being valued, and whether visitors or local households are valuing the species. Non-use values, especially the existence value of a species, was a major reason for respondents' WTP for species conservation (Kontogianni et al., 2012). Other studies found that altruistic/bequest value — that they have a moral obligation to help conserve species/future generations can also enjoy the benefits of a particular species — are more strongly intended to contribute towards conservation (Pienaar et al. 2017; Subade and Francisco, 2014). Respondents who demonstrated a higher level of environmental concern and who placed greater importance on protecting threatened and endangered species had stronger intentions of contributing towards species conservation.

WTP was generally found to be positively correlated with higher income and higher education level (Hakansson et al., 2011; Pienaar et al. 2017; Subade and Francisco, 2014). Results showed that the likelihood that respondents intended to contribute towards conservation depended on perceived behavioral control, measured using sociodemographic variables. Higher income individuals had higher probability of intending to contribute towards species conservation, provided that the funds were elicited through the payment of higher product prices, rather than higher taxes (Pienaar et al. 2010). Higher education also increased the likelihood that respondents intended to contribute (Jianjun et al. 2010). This is understandable because more years of schooling would arguably increase a person's knowledge about social, political, economic and environmental experience. Moreover, education increases the person's comprehension of conservation programs.

Respondents pay the population described in the hypothetical scenario through payment vehicles. The payment vehicle can be as follows: increase in local taxes, entrance fees, surcharge on bills, higher prices, and other mechanisms (Pandit et al. 2015; Subade & Francisco 2014; Pienaar et al. 2017). Jianjun et al. (2010) believes that payment vehicle design is a crucial element in application of CVM. In their study of valuing marine turtle conservation

in Asian cities, two payment vehicles were used. The first was a monthly mandatory surcharge on household's electricity bills and the second was a voluntary surcharge on household's electricity bills every month. Results of the study showed that the dummy variable Mandatory (for mandatory payment) was only positive and significant in Vietnam. The mandatory payment vehicle would produce higher willingness to pay for the marine conservation turtle for Vietnamese. The respondents in Beijing, Davao and Bangkok were indifferent for the payment vehicle.

MATERIALS AND METHODS

The Study Area

The Northwest Panay Peninsula Natural Park is located on two provinces in the island of Panay, Philippines; in the provinces of Aklan and Antique. It has an approximate area of twelve thousand nine and twenty-nine hundredth (12,009.29) hectares or 120.09 km2 (House Bill 4758), situated within the municipalities of Nabas, Malay, Buruanga, Libertad and Pandan (11°49'25"N 121°59'55"E, Figure 1).

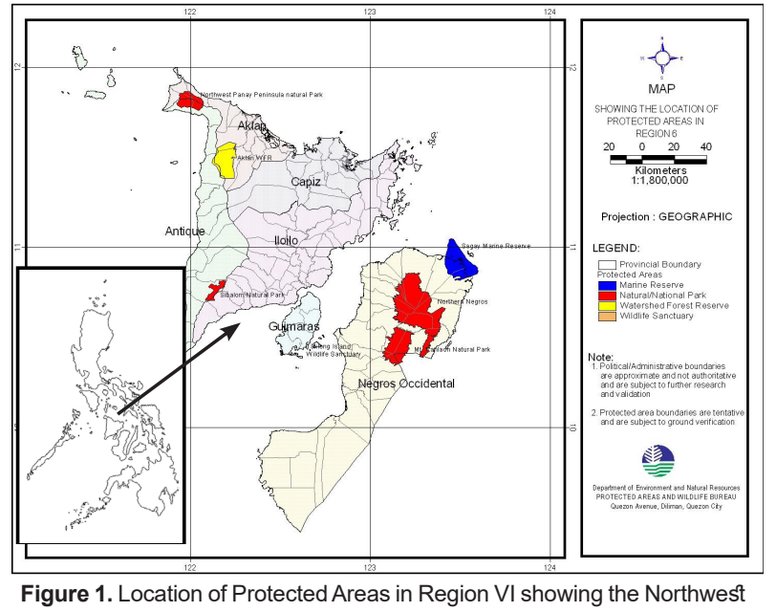

Figure 1. Location of Protected Areas in Region VI showing the Northwest Panay Peninsula Natural Park, Philippines. *(Source: Department of Environment and Natural Resources, 2017.)*

In recent years, surveys in the area have recorded many highly threatened bird and mammal species, including the Negros bleeding-heart pigeon *Gallicolumba keayi* (critically endangered), Visayan tarictic hornbill Penelopides panini panini (endangered), Visayan wrinkled hornbill *Aceros waldeni* (critically endangered), white-winged cuckoo-shrike Coracina ostenta (vulnerable), green-faced parrotfish *Erythrura viridifacies* (vulnerable), and Visayan warty pig *Sus cebifrons* (critically endangered) (Curio 2002). Moreover, as a less studied site, various species not yet recorded, have been discovered mainly by the Frankfurt Zoological Society-supported Philippine Endemic Species Conservation Program (PESCP) in the site such as *Ardea cinera* (grey heron), Ardeola speciosa (Javan pond heron), Gorsachius giosagi (Japanese night heron), *Anas clypeata* (European northern shoveler), Ophiophagus Hannah (king cobra), Elaphe *erythrura psephenoura* (rat snake), *Python reticulates* (reticulated python), *Ptenochirus jagori* (musky fruit bat) and 17 endemic butterfly species. Some scientists claim that the Northwest Panay Peninsula may qualify for a world record of biodiversity as measured by the number of animals and plants per square kilometer. However, due to lack of studies, much needs to be accounted yet on the site's biodiversity in terms of the number of species, particularly those endemic to the site. Hence, there is a great imperative for conserving the area.

METHODOLOGY

Primary data on the WTP of randomly selected residents in Kalibo, the capital town of Aklan province, and San Jose, the capital town of Antique province, were gathered through self-administered (SA) survey using the drop-off (DO) approach (Subade and Francisco, 2014; Cook et al., 2012; Whittingtonn, 2010). These survey sites were chosen since they play crucial roles in the respective provincial governments' decision-making process particularly in the allocation of budget for funding development projects and public goods. Moreover, they are the biggest urbanized towns in these provinces, though both can be considered rurban (more rural and some urban). Two towns of Antique and three towns of Aklan cover the NWPPNP, hence the conservation of NWPPNP was expected to be of immediate concern for the residents of these provinces.

The study examined two payment vehicles as regards their potential

for soliciting people's WTP and possible financing source for conservation: Electric bill surcharge and the annual community tax collected by the local government treasury.

Electric Bill (ELEC) Surcharge. A mandatory payment through a surcharge in the monthly electric bill for the next five years was proposed to be used as a payment vehicle for conservation. Electricity is widely distributed all over Panay, though there remain some rural households that are not yet reached by electricity. Moreover, a similar surcharge known as environmental charge is already being collected on a per kilowatt basis per household, amounting to PhP 0.0025 per kilowatt of electricity consumed. So far no one has protested nor complained about this surcharge, which is reflected in the unbundled rates indicated in the electricity bill. It was clearly explained to the respondents that the proposed surcharge in this study is a fixed surcharge, and will not vary with the volume of electricity used.

Annual Community Tax Surcharge or Cedula (CED). Every resident of legal age is required to obtain a residence certificate (commonly called "cedula"), which he/she will need for any documented transactions like purchase of property, signing a contract, transacting in a bank, etc. Using such a payment vehicle would make it possible to cover all households (and as many people of legal age) in the collection of any environment-related fee like the conservation fee being proposed by this study. The proposed surcharge would be imposed yearly for the next five years. In the focus group discussions (FGDs) conducted in April–May 2005, this payment vehicle was found to be the most popular among the FGD participants.

Sampling Plan and Procedure

To ensure that there will be at least 40 samples per bid, 60 respondents per bid were obtained to have allowances for item nonresponse, nonreturn of questionnaire, refusal to participate, and questionable answers. With five bids and two payment vehicles, the study had 1200 respondents altogether.

Eight *barangays* each were randomly selected in San Jose and Kalibo. For each *barangay,* the number of respondents randomly selected was proportionate to the total number of households.

The target respondents were the household heads, but if unavailable, the spouse or another adult (18 years old and above) member of the family/household who is an income earner was interviewed. A randomly selected

replacement was used for the survey in case randomly selected household-respondent could not be found or refused to participate in the survey.

A self-administered-CVM survey was used as a data collection tool with the use of a "drop-off" protocol (Subade & Francisco, 2014, Jianjun et al. 2010, Whittingtonn, 2010). Interviewers made personal contact with the respondents, but left the survey with the respondent to complete. An appointment was made to retrieve the completed questionnaire and answer any questions. The drop-off protocol has been proven to provide high return rates of completed questionnaires and is not prone to interviewer bias (Subade, 2005).

RESULTS AND DISCUSSION

The final survey was conducted in San Jose Antique and Kalibo, Aklan in eight waves that covered weekends from late September to middle of December 2005. There were 600 target respondents from San Jose and 600 from Kalibo, for which the equivalent number of questionnaires were distributed to randomly selected respondents, based from the sampling lists provided by each barangay.

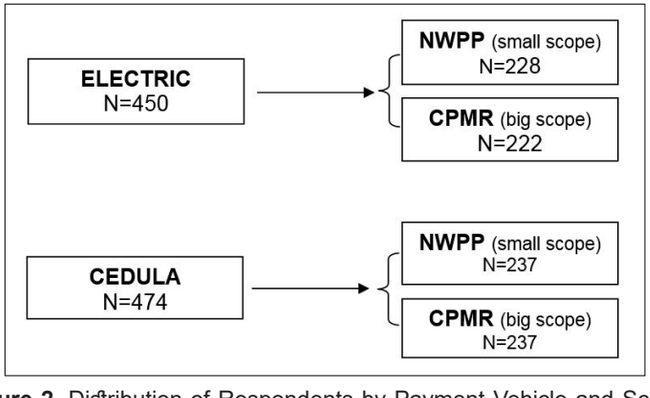

Figure 2. Distribution of Respondents by Payment Vehicle and Scope (N = 924)

Out of the 1200 questionnaires distributed, 1106 were accomplished, returned to the enumerators, and found usable for the purpose of this study. After protest vote-responses to WTP question were removed, 924 were found usable for analysis. Figure 1 shows the distribution of the 924 questionnaires,

whereby protest votes were removed and certainty responses were adjusted.

Willingness to Pay for Conservation. Responses to WTP question by payment vehicle are given in Table 1 below. The low (i.e., below 50%) rate of affirmative replies in all respondent groups is not surprising, as this was also found by previous studies on non-use values (Giraud et al., 1999, Berrens et al., 2002; Seenprechawong, 2001; Subade, 2005).

Table 1. *Respondents' WTP for Conservation of Endangered Species and Habitats at NPP*

Bid Price	WTP Reply				TOTAL
	Community Tax (CED)		Electric Bill (ELEC)		
	Yes	No	Yes	No	
60	13 (6.84%)	85 (44.74%)	17 (8.95%)	75 (39.47%)	190
120	15 (7.98%)	77 (40.96%)	22 (11.70%)	74 (39.36%)	188
360	9 (4.79%)	85 (45.21%)	15 (7.98%)	79 (42.02%)	188
600	11 (6.25%)	76 (43.18%)	8 (4.55%)	81 (46.02%)	176
1200	14 (7.69%)	89 (48.90%)	5 (2.75%)	74 (40.66%)	182
Total	62	412	67	383	924

Reasons for WTP. To distinguish the components or rationale for positive WTP, those who responded "yes" to the WTP question were also asked to state their reasons or motives for such. The economic values or motives for willingness to pay in Table 2 were categorized based on Stevens et al. (1994), McConnell (1997), and Manouka (2001).

Table 2. *Reasons for Respondents' Willingness to Pay (N = 129)*

Reason	Community Tax (CED)	Electric Bill (ELEC)	All
1. I want to preserve NWPPNP [and CPMR (Central Panay Mountain Range)] because I visit it. (direct use value)	5 (8.06%)	9 (13.43%)	14 (10.85%)
2. I want to preserve NWPPNP (and CPMR) because I directly use or consume goods and services such as birds, medicinal plants, reptiles, ornamental plants, etc. from it. (direct use value)	3 (4.84%)	2 (2.99%)	5 (3.88%)
3. I want to contribute to preserve NWPPNP (and CPMR) for future generations. (bequest value)	31 (50.0%)	29 (43.28%)	60 (46.51%)

4. I take personal pleasure in knowing that NWPPNP and CPMR will continue to exist. (existence value)	4 (6.45%)	3 (4.48%)	7 (5.43%)
5. I would like to contribute because I am concerned about the people who depend upon the goods and services provided by NWPPNP (and CPMR). (nonpaternalistic altruistic motive)	2 (3.23%)	2 (2.99%)	4 (3.10%)
6. I would contribute because I think that the goods and services provided by NWPPNP should be available for others. (paternalistic altruistic motive)	2 (3.23%)	2 (2.99%)	4 (3.10%)
7. I do not use NWPPNP (and CPMR) now, but I am willing to contribute to have the option of visiting/using it in the future. (option value)	1 (1.61%)	1 (1.49%)	2 (1.55%)
8. I am contributing because marine plants and animals in NWPPNP (and CPMR) have the right to exist independent of anyone's use either in the present or future. (existence value)	5 (8.06%)	6 (8.96%)	11 (8.53%)
9. It is a good cause and I enjoy contributing to good causes in general. (good cause)	5 (8.06%)	6 (8.96%)	11 (8.53%)
10. It is my moral duty to contribute to preserve NWPPNP (and CPMR). (moral duty)	2 (3.23%)	5 (7.46%)	7 (5.4%)
11. Others	0 (0%)	(1.49%)	1 (0.78%)
12. Unanswered	2 (3.23%)	1 (1.49%)	3 (2.33%)
Total	62	67	129 (100%)

Table 2 confirms the a *priori* expected outcome; that is, since most of the respondents were offsite (i.e., more than 100 km from NWPPNP) regardless of payment vehicles, their direct use values would be small. Across respondent groups, no more than 20 percent cited use values (categories 1 and 2), though when combined these were the second most cited motives for WTP. On the other hand, the main reason/motive for WTP was bequest values — the concern for future generations. Almost half (47%) of all respondents cited this as their main reason. Moreover, nearly half of the community tax group cited it as their motive for contributing to the hypothesized conservation fund. These respondents believed that the endangered species and habitats in NWPPNP ought to be conserved so that there can be something for their children and children's children.

A distant third WTP motivation were existence values — the belief that marine plants and animals in NWPPNP have the right to exist independent

of anyone's use either in the present or future and good cause. It was cited by nearly 9 percent of the respondents (8.06% of CED respondents, 8.96% of ELEC respondents)

Reasons for Non-WTP. Respondents who indicated unwillingness to pay were also asked to indicate their reasons. As mentioned earlier, protest votes were removed from the data set. These were the no-replies whose reasons included: "being far from the place I feel paying anything is irrelevant to me", "I do not think paying will solve the problem", "I believe this improvement will take place without my contribution", and "I do not trust the institutions who will handle the money for this conservation work." Several authors explained that such responses should not be included in further analysis particularly in the WTP function's regression(s) (Loomis et al. 1993; Stevens et al. 1994; Spash et al. 2000; Manouka 2001). Zero bids (or no replies) associated with protests do not necessarily indicate a zero value for the resource being valued (Manouka 2001; Stevens et al. 1994). Respondents may be objecting to some aspects of the survey. For example, they may be objecting or rejecting the way the CV question was asked as to collecting contributions from people. They could also be rejecting the scenario being hypothesized as to the "good" being "purchased" by their WTP. Such respondents/responses are also called scenario rejecters.

Of the remaining 795 "no" replies across payment vehicle groupings, 55 percent cited economic reason for non-WTP (i.e., they could not afford to pay or they did not have spare income to give for the conservation trust fund) (Table 3).

Table 3. *Reasons for Respondents' Nonwillingness to Pay*

Reason	CED	ELEC	All
I cannot afford to pay/I have no spare income but would otherwise contribute.	233 (56.55%)	208 (54.31%)	441 (55.47%)
I feel the environmental improvement of NWPPNP (and CPMR) is unimportant.	6 (1.46%)	6 (1.57%)	12 (1.51%)
Other reasons	14 (3.39%)	10 (2.61%)	24 (3.01%)
Not applicable	159 (38.59%)	159 (41.51%)	318
Total	412	383	795

Determinants of Willingness to Pay. Logit regressions were conducted on the data set from which the protest votes had been removed and the certainty was adjusted. Table 4 shows that across payment vehicles and by pooled regression, the coefficient for bid or price (WTP per year) is significant and has a negative sign, an a priori expectation consistent with demand theory. This means that at higher prices, the probability of people willing to pay for the good decreases. Alternatively, as price increases, the demand would lessen (Table 4).

Furthermore, income was found to be significantly affecting WTP in all data set regressions, and is positively signed; familiarity with endangered species is also positively affecting WTP of Cedula respondents. On the other hand, WTPYr or bid price is not significantly affecting Cedula respondents. This means that regardless of bid price, still less Cedula respondents were willing to pay for the conservation of endangered species and habitats of NPP. However, WTPyr or bid price and educational attainment were found significantly affecting WTP of the ELEC respondents. As bid price increases, less ELEC respondents were willing to pay. Educational attainment was found significantly affecting WTP of ELEC respondents which means that the more educated or higher the educational attainment, the more he is willing to pay. This is may be because of the increase in the level of awareness in environmental issues like endangered species conservation as people get more educated.

Table 4. *Regression Results of WTP Model when Protest Votes were Removed and Certainty was Adjusted*

Variable	Community Tax (CED)	Electric Bill (ELEC)	All
Constant	−3.126 (−3.182)***	−2.815 (−3.220)***	−2.928 (−4.602)***
WTPYr	−0.000029 (−0.088)	−0.00155 (−3.319)***	−0.00065 (−2.445)**
Income	0.000038 (2.663)***	0.000044 (2.455)***	0.00004 (3.507)***
Age	−0.0081 (−0.683)	0.00137 (0.121)	−0.00198 (−0.244)
Sex	−0.207 (−0.718)	0.0776 (0.271)	−0.047 (−0.233)
EducYrs	0.0261 (0.358)	0.0819 (1.814)*	0.059 (1.807)*
Fames	1.34 (2.163)**	0.246 (0.579)	0.64 (1.888)*
HelpFm	−0.153 (−0.515)	0.234 (0.774)	0.021 (0.1)

Note: * significant at 10% level; ** significant at 5% level; *** significant at 1% level

Parametric and Nonparametric Mean WTP Estimation of Conserving NPP Species and Habitats

An advantage of nonparametric analysis of CV data is that the response to price can be directly observed in the data (Jianjun and Wang, 2005). This nonparametric technique on analyzing WTP responses develops survivor curves showing the likelihood of agreeing to pay the yearly/monthly fee (e.g., a surcharge on the Electric bill or annual community tax) as a function of how much the respondent was asked to contribute (bid price). This means that for each bid price (PhP 60, PhP 120, PhP 360, PhP 600, PhP 1 200), the percentage of respondents willing to pay the corresponding requested bid price can be calculated.

The lower bound and midpoint methods were used in estimating the nonparametric values of mean WTP. Table 6 shows the parametric and nonparametric estimates for both methods, across payment vehicles. Across all respondents (i.e., the pooled data), the nonparametric annual mean WTP amounted to PhP 140 for the lower bound estimate, and PhP 176 for the middle bound estimate. When computed for monthly equivalent, mean WTPs were PhP 12 and PhP 15, respectively. These figures are not very far from the nonparametric estimates for both the community tax-based and Electric bill-based mean WTPs.

In contrast, the parametric mean WTP for all respondents, using Hanemann's formula, is almost 80% bigger than the survivor function-based estimates. Moreover, the parametric estimate for the community tax-based annual mean WTP is large at about PhP 3 000.00, which is due to the nonsignificance of bid amount as determinant of WTP for the community tax data regression. Nonsignificance for Cedula or community tax was also stressed in the study of Morrison et al (2000) wherein unfamiliarity with the use of tax levies and referenda was believed to affect the plausibility of payment vehicles and lead to payment vehicle bias.

Table 5. *Parametric and Nonparametric Estimation of Mean WTP*

Hanemann's Formula	Yearly		Monthly	
All respondents N = 924	253.89		21.16	
Community tax (n = 474)	**		**	
Electric bill (n = 450)	165.8		13.8	
	Lower Bound		Middle Point	
Survivor Function (Nonparametric)	Yearly	Monthly	Yearly	Monthly
All respondents (N = 924)	140.47	11.7	176.29	14.69
Community Tax (n = 474)	152.62	12.7	179.27	14.9
Electric bill (n = 450)	122.68	10.22	170.49	14.21

SUMMARY AND CONCLUSION

There has been lack of information on average citizen or household preference for and awareness of endangered species conservation, particularly in the developing country setting. This study documented and found that in rurban San Jose Antique and Kalibo, Aklan (consisting of about 22,267 households), people have high level of awareness of the importance of endangered species conservation. However, when asked for specific (monetary) commitment, the majority was unwilling or noncommittal.

Based on the dichotomous choice CVM survey, results confirm the low WTP of respondents since only up to 14 percent were willing to pay for the hypothesized conservation fund for NWPPNP's endangered species and habitats. This is almost the same portion as those who were willing to pay through either of the payment vehicle groupings. The main motivations for their WTP were bequest and use values. On the other hand, the survivor function estimates of mean WTP showed that the average respondent was willing to pay as contribution to the conservation fund amounts ranging from PhP 122 to PhP 176 per year. These WTP estimates can collect a modest social WTP of PhP 2.7–3.9 million, which is not sufficient to cover the opportunity costs of conservation. Thus, sourcing conservation funds for NWPPNP should go beyond the local residents.

In retrospect, recognizing the rich biodiversity of the site and the country's commitment to biodiversity conservation as enshrined in the NIPAS Act of 1992, the Rio Summit of 1992 and the International Convention on Biodiversity Conservation, Philippine President Gloria Macapagal

Arroyo signed a declaration in April 2002 establishing the Northwest Panay Peninsula Natural Park (Presidential Proclamation No. 186). In 2014, the Philippines House of Representatives approved on third and final reading a bill declaring the Northwest Panay Peninsula as a protected area. House Bill 4758, or the Northwest Panay Peninsula Natural Park Act, aims to conserve and protect the biological and physical diversities of Northwest Panay Peninsula through sustainable and participatory management by the local governments in Aklan and Antique (House Bill 4758). Former Senator and now Congresswoman of Antique Loren Legarda urged her fellow Antiqueños as well as citizens of the Panay island to protect NWPPNP (Legarda, 2018). Legarda, a staunch environmentalist, said that protected areas are critical in biodiversity conservation, to quote "Antiqueños and Aklanons are fortunate to have the Northwest Panay Peninsula Natural Park, home to the famous Tarictic Hornbill and Dulungan Hornbill and other endemic species of flora and fauna in Western Visayas. Its lush forest and natural spring are important sources of water and refuge for various animals in the area".

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The Long March Toward Moral Leadership in Business

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This paper takes up the challenge in business ethics of how to achieve compliance with a firm's or a profession's or an industry's code of ethics. Using the experiences that the authors have had in addressing this challenge, particularly in China, the paper attempts to map a solution beyond persuading institutions to adopt or adapt a code of ethics. While codes of ethics are necessary to achieve ethical integrity, they are not sufficient. What more is needed? The paper argues that a change of heart, informed by a convergence of the wisdom traditions represented by Confucian entrepreneurship and Catholic social teaching, provides a realistic basis for making progress toward moral leadership in business. The paper seeks to provide concrete practical guidance on how to walk the path toward its realization. While the argument is couched in terms that reflect the authors' experiences in China, we believe that it is relevant to doing business, not only in China, but also in the Philippines and throughout East Asia and beyond.

Keywords: Corporate codes of ethics, institutionalizing codes of ethics, compliance, moral leadership, moral virtues for business leaders and managers, vocation, Catholic social teaching, Confucian moral philosophy, Confucian entrepreneurship

INTRODUCTION

In Stephan Rothlin's essay, "Taking our Codes to China" (2013), coauthored with Kirk Hanson, there appears to be a missing link between corporate codes of business ethics and achieving compliance with them. In this paper,

we attempt to identify this missing link by highlighting the importance of moral leadership in business. What we mean by moral leadership will be spelled out with reference to the recent Vatican document now published in Chinese as well as English and other languages, "The Vocation of the Business Leader" (PCJP, 2015), referred to in this essay as "the VBL document," which examines the ethical challenges that business executives face today informed by the insights of Catholic social teaching. We supervised the translation of the document into Chinese precisely at a time when our own ethical reflections had turned toward virtue ethics and specifically the legacy of Confucian moral philosophy as a way to develop an approach to international business ethics which would make practical sense in Chinese and East Asian contexts.[1] Here, we hope to show how these influences converge in an appreciative understanding of the ideal of Confucian entrepreneurship, which we believe provides one of the most effective vehicles for addressing the challenges of moral leadership when doing business in and for China and East Asia.

Let us begin by reviewing the question of corporate codes of ethics and their effectiveness. We will argue that, while codes are necessary, they are not sufficient. Sufficiency, we believe, occurs only when there is general compliance with codes. But how is compliance achieved? With that question in mind, we seek a shift from external to internal forms of compliance. At the core of our argument is fresh insight into the significance of Chinese law, which presupposes the integration of law and ethics, not their differentiation or opposition.[2] Consistent with this model, the focus must shift toward maintaining a balance between external and internal approaches; that is, the cultivation of virtues, policies, and practices that will support effective law enforcement. Those responsible for compliance—business leaders, chiefly—must be motivated to change policies in their own firms to create a culture of compliance, working cooperatively with government regulatory agencies charged with responsibility for external compliance. Internal compliance, however, can only be realized through a collective change of heart. Moral leadership will be indispensable for this change of heart, not only among a firm's own employees and stakeholders, but also within an industry or the entire business community.

Confucian entrepreneurship, we will argue, offers the best chance of achieving the change that will make ethical considerations central to

business development in China. We will show that the VBL document may serve as an important resource for maintaining the stability and effectiveness of Confucian entrepreneurship, so that in its popularity it does not devolve into just another empty slogan. Our arguments are based both on commonly available published sources as well as our own experience in organizing and conducting corporate workshops and academic seminars on the practice of moral leadership while doing business in and for China over the past 20 years.

What is Wrong with "Taking our Codes to China"?

If this was your first business trip to China, what else would you be taking? If you knew anything about Chinese business etiquette, you would probably think first about packing a selection of gifts for your prospective partners, customers, or clients. But no sooner would you be considering which gifts might be appropriate, for whom, and why, but you might be forced to consult the company code. Is there a section on gifts, bribes, and extortion? What does it say about engaging clients, attracting customers, and acknowledging government regulators and other stakeholders who may have an impact on your business plan? Does it mention, for example, the USA's "Foreign Corrupt Practices Act" (1977)? This act, to be sure, prohibits bribery and other questionable transactions involving government officials. But what about private business transactions? Are you free to provide gifts and other incentives in exchange for business? If you are following the company code, perhaps not; but you would not know for sure unless you take the code with you to China or anywhere else you hope to do business.

It may be useful to recall precisely what a code is for. Codes may come in various sizes, ranging from highly detailed guidelines intending to provide specific advice for handling almost any situation that may arise in doing business. In short, codes are succinct statements of principle meant to define the basic moral aspirations informing the firm's corporate culture. Of course, there is no perfect code of ethics, no authoritative "one size fits all businesses" statement that can be handed down from one set of managers to the next. Nevertheless, a firm's code should state general expectations for all employees, the core of beliefs and values that animate it wherever it may be doing business. In that sense, it is universal. But this universality should

not remain abstract but must be contextualized to reflect the concerns of employees in each local operation where it is to be used.

Contextualizing your firm's code for its operations in China and East Asia involves several practical steps that were well presented by Hanson and Rothlin (2013). They start by outlining global trends that favor the development of company codes. First, given the unprecedented levels of information sharing through digital media worldwide, what goes on in local markets at the periphery will surely be reported and evaluated at the center. Popular brands, including Apple Iphones, have suffered losses because of the negative impact of alleged sweatshop conditions in their manufacturing operations abroad (Rothlin & McCann, 2016, pp. 157–177). Second, the struggle against corruption has been globalized, and companies can no longer assume that "When in Rome, do as the Romans do" will be sufficient to excuse their failure to cooperate. Third, the efforts of various international organizations, such as the World Economic Forum in Davos, have made significant headway in promoting the United Nations Global Compact, targeting major multinational businesses to pledge adherence to its ten original principles, as well as its campaign for sustainable development goals (UNGC, n.d.). Such trends are creating an international business climate in which company codes become an important instrument for demonstrating the firm's commitment to topnotch standards of business ethics.

Even with such trends, there are challenges that must be addressed, if a company's code is to be launched successfully in its local operations abroad. Hanson and Rothlin (2013) rightly point out five general obstacles to be faced in developing economies: First, there is diversity in "cultural expectations and standards," meaning that there may be significant variation in how, for example, the morality of preferential hiring of one's relatives or acceptable rituals for sealing business deals are regarded. Second, there is "social and business community pressure to conform" to local practices. Anything beyond just paying lip service to the company code may be resisted as "disruptive." Third, a firm's local management, understandably, may be wedded to local practices and may require special attention to change their usual ways of doing things. Fourth, the priorities of local and national governments may not be supportive of the firm's need to change local managerial practices. Finally, a foreign business is well advised to "exercise particular caution until it develops an understanding of the local culture and

acquires trusted business partners ." After all, the foreigners easily become a "target of opportunity" for locals who are eager to profit from their cultural inexperience and ignorance of local business conditions.

Doing business in China, however, requires even greater appreciation of China's history and culture. The salient points mentioned by Hanson and Rothlin (2013) emerge from both long-term and recent developments. The weight of China's complex history and culture is evident in the "widespread conviction that everything which comes from outside China needs a profound process of adaptation and inculturation in order to become accepted and relevant in the Chinese context." The persistence of "premodern" behavior and attitudes, thought to be characteristic of an Imperial China that passed away with the revolution of 1911,[3] is striking, such as the "respect for local hierarchies" that tends to grant senior managers "the status of benevolent dictators who are accountable to no one." The past lives on in other ways, as well. What foreigners might dismiss as ancient history, such as the Opium Wars of the 19th century, perpetrated by the British Empire or the Japanese occupation in the 1930s and 1940s, are regularly featured in the news media and the film industry. They remain a living cultural memory that still influences popular attitudes toward all Western companies, not just those from the United Kingdom or Japan. As Hanson and Rothlin (2013) observe, "eruptions of such feelings can delay or derail deal-making and normal operations at unexpected moments." On the other hand, Chinese history and culture also provide abundant resources for promoting good business practices. Confucian tradition holds out an ideal of moral leadership, in the figure of the "Junzi" ("君子")—the morally refined person whose example will inspire moral behavior beyond what could be obtained through mere compliance with the law. Currently, the resurgence of interest in Confucian philosophy is an important stimulus toward greater respect for the dignity of each person and human rights, especially the rights of women and children, as well as a greater sense of environmental responsibility, not to mention the adherence to the rule of law, and the cultivation of personal virtues, like honesty, frugality, benevolence, and righteousness, that support good business anywhere and everywhere. As we hope to show further on, Confucian tradition today has yielded an ideal of "Confucian entrepreneurship" which may be our best chance of internalizing the attitudes and practices enshrined not only in the UN's sustainable development goals, but also in corporate

codes of ethics that promote them.

"Taking one's code to China" can be done successfully relying on certain practical measures based on the experiences of others who have tried it. Hanson and Rothlin (2013) list eight of such recommendations:

1. *Inculturate your code.* This means to make the effort to "integrate both global consistency and local sensitivity." This requires patience and opening the process to genuine participation by local managers who will have to live by the code.
2. *Make the company code consistent with Chinese laws.* This requires assessing "the alignment of local laws (many very recently adopted) and the company's code of conduct." You should recognize the impressive recent advances in the development of Chinese law, as well as the antiquity and persistence of China's legal traditions. The challenge, of course, in China as elsewhere lies in effective implementation or compliance.
3. *Align your code with Chinese concepts and slogans of key government officials.* The policies adopted, as well as statements disseminated at the National Peoples' Congress and other important deliberative bodies, should be studied, especially for "the key phrases or slogans meant to organize and direct the path of Chinese economic and social development;" for example, Hu Jintao's concept of "Harmonious Society," promulgated in 2006. As Hanson and Rothlin (2013) observe, tying corporate norms and standards of conduct to such national objectives can strengthen corporate efforts, not only because employees understand the alignment of corporate and national goals but also because the company could occasionally secure government help in enforcing its code that it would not otherwise receive.
4. *Incorporate references to global standards embraced by the Chinese.* This requires continuous monitoring of news in China, focused on significant events, such as the endorsement of the "United Nations Global Compact," which currently lists 283 Chinese businesses (UNGC, 2018). Spreading such positive news creates a climate of acceptance that not only identifies potential allies and partners but also strengthens the credibility of the firm's own code among its employees.

5. *Publish the code in bilingual format.* Given the status of English as China's second language, especially in business and the professions, bilingual publication may seem superfluous. But Western firms operating in China will have employees who are eager to compare the actual English words with the Chinese characters chosen as direct translations. "Translation into Chinese demonstrates a seriousness of purpose and a commitment to enforce the code," in China as elsewhere.
6. *Introduce the code in a Chinese way.* It is not enough to promulgate the code by email or distribute a printed booklet, along with making an annual ritual of signing a compliance statement. Codes in China should be "introduced with considerable time available for discussion, objection, and clarification and in a workshop conducted in their own dialect." How the workshops are conducted is also crucial for reception of the code. Chinese employees must see that top management, both international and local, is committed to the code and must have the opportunity to discuss its implementation with their supervisors. Discussion of the code should be a part of the training of all new employees. Training must address the most common dilemmas employees will face to give clear and understandable signals about the type of behavior expected. Education in the code must be tailored to the several hierarchical levels within the firm, which may mean that each level will have its own workshop; for example, workshops by invitation to senior executives, middle managers, and hourly employees.
7. *Do whistleblowing in a Chinese way.* Perhaps "whistleblowing" is not a term well suited to Chinese business culture. Instead of a hotline for reporting violations, the vehicle for ongoing communications should be promoted as a "help line" designed to advise employees on how to report and receive feedback on troublesome situations. Employees using a "help line" should remain anonymous and have their complaints treated within a policy of genuine confidentiality. A Chinese "help line" will require more promotion and explanation than it may in other places where such devices are well-established. Given the customary Chinese deference to hierarchy, serious complaints involving, for example, wrong doing on the part of top

management, may have to be dealt with by the highest authority in a company — for example, by an "owner's advocate" who is a board member of the board of directors.

8. *Extending the code to business partners.* The need for achieving alignment on basic standards of business ethics clearly arises from the expectations of a firm's stakeholders, especially its customers abroad. As Apple learned in its dealings with Foxconn, companies will be held responsible for the questionable practices of their subcontractors (Rothlin & McCann, 2016, pp. 158–166). While due diligence is obviously required in the selection of partners, such is hard to achieve. As Hanson and Rothlin (2013) observe, "Chinese firms, particularly those with experience operating in an international business environment, and firms with experience in previous partnerships with Western companies can be effective and ethical local partners." The challenge is to be careful in identifying partners capable of "operating by 'international standards' as opposed to Chinese or local standards." Once again, this takes us full circle to the process of inculturation.

Implementing these steps, of course, requires a very high degree of close collaboration between the firm's top management and its local executives. The local executive team in China, for example, should be led by Chinese, supported as needed by expatriate staff, who should collaborate in developing the "inculturation" process. The local managers will likely be "the best source of ideas for doing this successfully without abandoning the firm's global standards." The question whether a Chinese national or a foreign passport holder should be a Western company's top officer in China has some bearing here. Having a foreign executive promoting and enforcing the code may make it seem "more foreign and less practical" in the minds of the local employees. A Chinese executive may be more effective in advancing the code, particularly if he is credible and consistent in his support for it. Ideally, he would be the most persuasive champion, if the code is to take root in China. Whatever the composition of the leadership team, the most important key to success is "to create a system of accountability — of monitoring and auditing compliance with the code." Accountability means that there are real consequences—and perceived as real—for ignoring the code, merely paying

lip service to it or actual violations of it. Any inconsistency on compliance issues will, alas , convey a signal that the management team is not serious about the code. Given Chinese assumptions about the privileges of hierarchy, it is essential that the code be seen to apply equally to all members of the firm and not just selectively enforced upon lower level employees. As Hanson and Rothlin (2013) observe, "existing hierarchies can be respected without thereby exempting them from accountability to the code." Accountability must be shared collectively, just as trust must be mutual.

Confucian Entrepreneurship and the Challenge of Inculturation

In spite of the difficulties presented by a business climate that remains skeptical about the relevance of international standards, Hanson and Rothlin (2013) urge foreign firms doing business in China to bring with them their corporate codes of ethics. The key is finding a way to inculturate the codes, enabling them to emerge as a product of genuine efforts to achieve mutual trust and cross-cultural understanding. Such a strategy not only places a significant burden upon the firm's top management locally, but it also suggests that, while the recommendations given are necessary, they are hardly sufficient for making the codes an accepted routine in your local operations. What is missing, we contend, in an understanding of moral leadership, is how it can be promoted among a firm's local managers and employees.

Inculturation involves careful attention, for example, to China's own traditions of moral leadership. The most salient of these is the current discussion of the ideal of "Confucian entrepreneurship" advanced by the founder of Alibaba, Jack Ma, among others. Here is a general description:

Confucian entrepreneurs can be defined as those who apply traditional Chinese cultural values in respect to maintaining the moral beliefs of Confucianism in all aspects of business practice… Confucian values were applicable to positive interpersonal relations in business practice and in the workplace, in regard to successful human resource management in particular. These values included: trustworthiness, Ren (compassion, humanness), Li (ritual, etiquette), harmony, and tolerance of others. These values of interpersonal relations can generate a more successful human resource management. Business philosophy can be guided by Confucian values of long-term orientation, resistance to corruption, and nurturing of

guanxi (relationships), which can be utilized for improvement of networking and developing positive business connections… This view of practice could have the potential to create entrepreneurs who perform ethical business practice. Under Confucian values, if businesses are governed righteously, they will succeed. (The Confucian Weekly Bulletin, 2015)

What this suggests is that China's own indigenous traditions of religious and moral wisdom are being reinterpreted as resources for advancing moral leadership in business and the professions.

Our own contributions to this effort are readily available, starting with our chapter in Springer Verlag's *International Business Ethics: Focus on China* arguing for "The Natural Priority of Moral Virtue" (Rothlin & McCann, 2016, p. 23–46). There, we focused on the ideal of *Junzi* (君子)—usually translated as the "gentleman" or "superior person"—who embodies Confucian virtues of benevolence (*jen,*) and righteousness (*yi*,), cultivated through the study and practice of ritual propriety (*Li*,). While such virtues may seem antiquated and incompatible with today's highly competitive business world, they are embraced by Confucian entrepreneurs who understand their own need for self-cultivation and personal renewal. Johnny Hon, a highly regarded business leader and philanthropist in Hong Kong, for example, described the process of self-cultivation inspired by Confucian wisdom: "I need to learn more, I need to become a better person. I need to learn more skills, I need to learn. And to have that attitude I think is important and that stops the ego from taking over what you want to do underneath." (Thompson, 2018 , p. 31). Contemplative practices common to Confucian and other traditions of moral wisdom enable entrepreneurs to acquire the habit of self-critical objectivity that enhances their capacity to make continuous progress despite adversity and setbacks in achieving their goals.

The *Junzi* (君子) is contrasted typically with *Xiaoren* (小人)—literally the "small man," who is mean-spirited in lacking the ability to look beyond his own immediate needs. As a model of entrepreneurial behavior, the *Xiaoren* is focused exclusively on short-term gain, heedless of the losses or costs imposed on others, incapable of trusting or being trusted by others. Therein lies the path toward business failure and self-destruction. The *Xiaoren* cannot achieve any permanent success in business—or any other endeavor, for that matter—because he inevitably becomes his own worst enemy. Confucian teaching assumes that people are naturally disposed

toward goodness, at the least cost to themselves and others. This openness to goodness is a resource for advancing best business practice, since people will naturally gravitate toward policies that work to achieve harmonious relationships for all concerned. Clearly, the credibility of the firm's code of ethics in China may well depend upon management's skill in aligning it with the notion of Confucian entrepreneurship, which resonates deeply with traditional moral wisdom. Confucianism is the East Asian way of doing well while doing good.

For all the potential latent in the ideal of Confucian entrepreneurship, there are also certain risks, as is evident in the history of China's government over the past millennia. As the *Confucian Weekly Bulletin* (2015) points out, "It has been argued that Confucian values such as obedience, respect for authority, and emotional control are not naturally compatible components of a common entrepreneurial standard." They can degenerate into negative attitudes and behavior; "for example, lack of initiative and innovation (due to the possible disruption of the existing order and threat to social harmony), [unless] righteousness and profitableness are balanced equally". As is well known to any Chinese struggling with conflicting ethical obligations to family and society, the Confucian ethic of filial piety (*xiào*, 孝) can become a straightjacket, imposing a hide-bound conservatism that makes pleasing one's aging parents the ultimate test of righteousness and benevolence. Maintaining the integrity of the family—ostensibly the key concept animating Confucian morality—can become a source of social irresponsibility.

There are Confucian remedies for the moral cancers that may grow through its teachings. What keeps *Junzi* from becoming *Xiaoren*, only more subtle and hypocritical because their crimes are motivated only for the sake of their families, is an ever more intense practice of self-cultivation. "Reverential carefulness" is how Confucius (551–479 BCE) describes it:

Zi Lu asked what constituted the superior man. The Master said, 'The cultivation of himself in reverential carefulness.' 'And is this all?' said Zi Lu. 'He cultivates himself so as to give rest to others,' was the reply. (Analects 14:42; Kindle Edition, Locations 2690–2693)

Giving rest to others means that others may be put at ease because they know that their leaders and colleagues are also looking out for their best interests. They can trust them. Reverential carefulness is a habit of mind, the fruit of the practice of self-cultivation, which enables persons to detach

themselves from the ways of the world and its all-too-human striving for pleasure, recognition, and power over others. Without such detachment, any claim to moral leadership is spurious. Nevertheless, achieving this state of reverential carefulness is easier said than done. Perhaps there is need for a vision of human existence[4] that goes beyond Confucius' proverbial agnosticism about the ultimate meaning of life.

Strengthening Confucian Entrepreneurship: The Vocation of the Business Leader (VBl)

Our own approach to strengthening Confucian moral wisdom is informed by the worldview that brought us to China and East Asia; that is, Catholic social teaching (CST). Informed by the principles and priorities of CST, we have attempted to follow the example of Matteo Ricci, SJ (1552–1610 CE), one of the first Jesuit missionaries to China, especially in his theory and practice of Friendship with the Chinese people. Of particular relevance to our concern here with the spiritual foundations for inculturating corporate codes of ethics is CST's recent statement, "The Vocation of the Business Leader" (VBL), issued by the Vatican's Justice and Peace Commission (PCJP, 2011).[5] Recently, this document has been translated into Chinese, and we have attempted to distribute it in various workshops and seminars promoting business ethics in China.

The VBL document provides a comprehensive understanding of the moral and spiritual challenges that business and professional men and women face today. Its tone is sympathetic yet firm in its appeal to the principles of CST, which are presented in a series of steps that are meant to have universal appeal and not focused exclusively on any one culture or situation. Central to the VBL perspective is the recognition that humanity is wounded and in need of spiritual healing. The wound is not simply personal but cultural and institutional, affecting all efforts to achieve the common good. As the Executive Summary observes, "obstacles to serving the common good come in many forms—lack of rule of law, corruption, tendencies toward greed, poor stewardship of resources—but the most significant for a business leader on a personal level is leading a 'divided' life."

What, then, is the "divided life"? The VBL document describes a "fragmentation" that "can ultimately lead to idolatry." Consistent with its

Christian sources, it quotes Jesus' warning: "No one can be the slave of two masters. He will either hate the first and love the second or be attached to the first and despise the second. You cannot love both God and money" (Mt 6:24)." Business leaders, it suggests, run the risk of losing their integrity and thus "will fill the void of purpose with a less worthy substitute. The divided life is not unified or integrated: it is fundamentally disordered and thus fails to live up to God's call." (VBL, 10). Deeper inquiry into the pathology of "the divided life" suggests its resonance with what Confucius observed in the *Xiaoren*. While Confucius invites his followers to take up the Way of the *Junzi*, based on the assumption that all people have a share in *Tianming* ( ), the "Mandate of Heaven," the VBL urges business leaders to respond prayerfully to their Divine calling or "vocation":[6] "[W]hen they pursue their vocation, [business leaders are] motivated by much more than financial success. When they integrate the gifts of the spiritual life, the virtues, and ethical social principles into their life and work, they may overcome the divided life and receive the grace to foster the integral development of all business stakeholders" (VBL, Executive Summary). The VBL Way, not surprisingly, involves a renewal of the business leader's Christian faith commitment, grounded for Catholics in the Mass and Sacraments:

"When the gifts of the spiritual life are embraced and integrated into the active life, they provide the grace needed to overcome the divided life and to humanize us, especially in our work. The first act to which the Church calls the Christian business leader is to receive the sacraments, to accept the Scriptures, to honor the Sabbath, to pray, to participate in silence and in other disciplines of the spiritual life. These are not optional actions for a Christian, not mere private acts separated and disconnected from business…. Sacramental worship is not an escape from the world of business—it gives us the space to see more deeply into the reality of the world and to contemplate God's work." (VBL, 68–69)

Receiving "the space to see more deeply into the reality of the world and to contemplate God's work," the VBL document helps business people to understand and respond to four basic challenges affecting their work today: "(1) globalization, (2) new communication technologies, (3) the financialization of the economy," and "(4) cultural changes…in particular, the challenge of individualism and accompanying moral systems of relativism and utilitarianism" (VBL, 17) which stand as obstacles to the exercise of

business leadership today. Each of these is given sufficiently detailed analysis so that people in business can recognize them in their own work.

Once these are understood, of course, the question is how to deal responsibly with them. The VBL perspective does not expect business leaders to abandon their vocations in some misguided search for a utopian alternative. Rather, it seeks to provide resources for maintaining one's focus, acting with integrity, to mitigate the negative consequences of each of these. The resources for coping with the four discerned challenges are already inherent in the settled principles of CST, namely, human dignity and the common good, and the principle of subsidiarity as a guideline for balancing or harmonizing the values inherent in each. There is nothing new in what the VBL document has to say about each of these points in CST, but they are presented in ways that resonate impressively with the overall emphasis on spirituality. Human dignity, for example, is rooted in the basic affirmation of Christian faith that humanity is "made to the image and likeness of God" (Genesis 1:26), an affirmation that transcends the optimistic reading of human nature advanced by European Enlightenment. The common good, by the same token, is theologically grounded in "the social nature of human beings, reflecting the community of the Trinity" (VBL, 34).

The appeal to the principle of subsidiarity points out the need for "creating subsidiary structures" that will enable one's employees to flourish as a community of persons—each of whom is assumed to have family ties and responsibilities—engaged in a common enterprise. Here is the VBL's agenda for "creating subsidiary structures" in organizing and managing a business:

"To define the scope of autonomy and decision-making at every level in the company. The business leader should allow these to be as significant as possible, but set clear limits so that decision rights do not exceed a person or group's access to the information required to make the decision, and so that the consequences of their decisions do not go beyond their realm of responsibility.

"To provide employees the needed tools and training and to ensure that they have the knowledge and skills to carry out their tasks.

"To establish a corporate culture of trust so that those to whom tasks and responsibilities have been given will make their decisions with genuine freedom. The company informed by subsidiarity nurtures mutual respect

and shared responsibility among all personnel. It allows employees to clearly appreciate the link between good results and their sincere engagement.

"This last point about decision-making is what distinguishes subsidiarity from delegation. Someone who delegates confers responsibility or decision-making power, but it can be taken back at any time. So delegation does not call employees to the same level of excellence and genuine engagement as do arrangements governed by the principle of subsidiarity, and thus, the employees are less likely to grow and to accept their full responsibility."(VBL, 49)

Though such prescriptions may seem no different from what enlightened management consultants would advise, they do indicate that what the VBL document proposes is not only based on common sense, but is also open to development and dialogue with other faith perspectives and wisdom traditions. The Catholic Church makes no exclusive claim to practical know-how on managing a business. Indeed, the VBL document explicitly recognizes the inherent claims of "prudence," meaning respect for the expertise of those with the experience of managing businesses and what can be learned from them. But it does suggest that "prudence" needs to be understood, in relation to the other virtues, like justice and compassion, to which it must properly be ordered:

"When business leaders face particular problems which need specific solutions, their actions are informed by "a prudential evaluation of each situation". This prudential judgment is not only a market-based or technical assessment. Prudence has often been reduced to the clever actions of leaders that advance their own private interests. This is not the virtue of prudence, but a vice separated from the requirements of justice. True prudence informs the mind of the business leader by asking the right questions and discerning the best courses of action for building good and just companies which can contribute to the common good." (VBL, 76)

One last observation about the VBL document may be useful here. It ends with an "Appendix;" that is, "A Discernment Checklist for the Business Leader." While Catholics may recall the practice of using a "particular examen of conscience" in daily devotions intended to scrutinize one's progress in avoiding sin and living more consistently by faith, such a device is virtually nonexistent in the documents of CST. In VBL, such is included to demonstrate that business leaders—particularly, Catholic and Christian

business people—should be challenged personally by the points presented in it. If readers have understood the VBL document, then they are called upon to practice it or to begin changing their personal and professional practices to become more consistent with it. Such a checklist is a handy way to help readers to measure their progress. The questions asked are general and open-ended, but they do follow the outline of points presented in the document as a whole.

Such a checklist may help us to recognize the point of convergence with Confucian entrepreneurship and the wisdom tradition that supports it. The processes of self-cultivation recommended over the centuries by Confucian scholars often involved devices like this particular examen. It might be argued, in fact, that the chief classic containing the teachings of Confucius, the *Lunyu* (Analects), is itself an extended exercise in mutual accountability within a community dedicated to following the Way of its master. Each chapter of the *Lunyu* provides a series of stories, snippets of conversations between the Master and his disciples, exploring the nature of the Way and how to make progress in it, often organized according to specific themes of practical significance to its followers. A careful reading of the Confucian classics—not only the *Analects,* but also *The Great Learning* (*Daxue*), *The Doctrine of the Mean* (*Zhongyong*), and the *Book of Mencius* (*Mengzi*)—suggests that there is a practical convergence between their pedagogical approach, as well as moral values, and those enshrined in CST and the VBL document. To be sure, at the level of depth-dimension, that is, the metaphysical beliefs and assumptions or worldviews, if you will, there is significant divergence between Christian theocentricism and Confucian agnosticism. Nevertheless, for practical purposes, they can and ought to make common cause in China, at least, in the spirit of Confucian entrepreneurship. The ideal of the *Junzi* as business leader and the notion of Christian business leadership proposed in the VBL document converge on most, if not all, matters of managerial and professional practices. There is nothing that would prevent a Chinese Christian from becoming and identifying with Confucian entrepreneurship. The underlying spiritualities may diverge, but the invitation to achieve and sustain moral integrity in business is convergent.

We started this reflection by asking, in a self-critical way, "What is Wrong with Taking your Code to China?" We argued that, while codes of

ethics and other instruments for achieving compliance with external norms may be necessary, they are not sufficient. What they lack is what Confucian entrepreneurship—in either its commitment to China's traditional practices of self-cultivation or its commitment to living by one's Christian vocation—may yet supply. Compliance is too modest an expectation. What is needed is a change of heart, the kind of change that can only occur as a result of engaging in spiritual practices that enable us to discern truthfully ourselves and the world in which we must act responsibly. The long march toward moral leadership has brought us face to face with the natural priority of virtue and its cultivation through spiritual practices, commonly available in the diverse wisdom traditions of China and East Asia.

Endnotes

1 It is useful to note that terms like "vocation" (in Chinese: "*zhaohuan*", "召唤") are still perceived as too heavily loaded with religious connotations for the taste of censors and need to be replaced with the more neutral term "mission" (in Chinese: "*sheming*", "使命"). See the Chinese translation of "The Vocation of the Business Leader" (PCJP, 2015).

2 Laszlo Ladany, the Chief Editor of "China News Analysis" (1953–1982), for example, recognized in the lawyers of the Tang dynasty a model for combining ethics with the law, which continues to inform Chinese jurisprudence to this day (Ladany, 1992).

3 As Bruno Frey (1990, p. 83) and Barbara Krug convincingly argue, neither the Revolution of 1911 nor the Cultural Revolution stretching from 1966 to 1976 could abolish the patriarchal structures deeply engrained in China.

4 One such vision is Mozi's (470–391 BCE) doctrine of universal love (Jian'ai, 兼爱), currently being reconstructed by many Chinese philosophers. Mozi's doctrine suggests an ethical rationalism, closer in spirit to Kant and Mill, insofar as any valid moral obligations must apply equally to all persons and should not be qualified by the nature of existing relationships among persons. The implication is that there is a limit to hierarchical claims of privilege and a limit to the claims of families upon their members. Universal love is precisely that, namely, a principle that overrides all categories of privilege or priorities based on status hierarchies. Rather than regarding Mozi and Confucius as locked-in contradiction, the revisionist tendency is to see them as complementary perspectives, with Mozi providing a metaethical principle that stabilizes and thus helps clarify Confucius' practical wisdom.

5 The CST in general and the VBL document in particular serve as an important resource for people based in the Philippines, seeking to do business ethically in China and East Asia. The legacy of CST has shaped the cultures and history of the Philippines over several centuries. It is a resource for all Christians, Catholic and Protestant, and finds common cause with the ethical teachings of Islam, honored in Filipino Muslim communities. Establishing a common moral ground, demonstrating the basis for mutual understanding between Chinese and Filipino business communities, is a priority in our work developing pedagogically effective materials for teaching international business ethics, as well as providing consultancy services to businesses seeking to expand their commitments to corporate social responsibility and corporate philanthropy. For more information, consult our website, *www.rothlin.org.*

6 The comparison of Christian "vocation" discourse and Confucian teaching about "*Tianming*" is a useful way to understand both the differences in these two perspectives—the one emphatically theistic, the other modestly agnostic—and the possibilities of moral consensus evident in their converging practical consequences (McCann, 2014).

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NOTES SECTION

Enhanced Framework for Undergraduate Psychology Practicum

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Having deconstructed the undergraduate psychology practicum program (Lamzon, 2015), I strongly suggest that practicum be part of the curriculum and be treated as a required subject, not simply an elective. To further prepare students for practicum work, I propose a practicum framework (Figure 1) aligned with the K to 12 thrust and outcomes-based education (OBE) for which immersion and other forms of exposure are considered important elements in meaningful learning. The framework also integrates the service learning component, community extension services, and the research component which are all aimed at preparing students to become competent professionals.

This enhanced practicum framework indicates that practicum exposure has three phases: orientation, pre-practicum, and actual practicum, and starts from the first year level up to the fourth year level. As a result of the gradual and well-planned exposure, they are expected to familiarize themselves with the different areas or specializations of their chosen field and, thus, develop a love for lifelong learning that is among the benefits indicated in the Philippine Qualifications Framework (PQF).

As illustrated in this proposed framework, during the orientation phase, it can be seen that immersion is the common strategy that runs across all year levels. For the first year level in particular, students are expected to be exposed to

the psychology field through field trips, visits to psychological centers, interviews with practitioners in the field, film viewing, symposia and fora.

In their second and third year, students are immersed through the major subjects. Their immersion would help them develop relevant knowledge, skills, competencies, attitudes and values and likewise clarify if they are fit for the psychology field. Their exposure and immersion to the different major subjects would also help them narrow down their areas of interest, such as psychological testing and assessment, industrial psychology, counseling psychology, developmental psychology, social psychology, educational psychology, and so on. In their third year, in particular, research becomes a major focus. Their research output would eventually focus on a specific field that interests them.

During all this time, from first year to third year, the academic advisers or teachers in the major subjects assist the students make sense of the immersion experience by conducting individual or group consultations and academic advising. Through reflection and insight generation, they are trained to become reflective and in the process, become more certain about the kind of field that they are preparing for. Likewise, their interactions with practitioners in the field and their involvement in community extension services are expected to bolster not only their learning but also their interest and passion for psychology-related fields. Moreover, in all the phases of the gradual exposure, evaluation activities are conducted to ensure that the objectives of each phase are achieved.

Having been exposed and immersed in the various psychology fields early on, students in their fourth year are expected to be more disposed to take on practicum work that is a focused kind of practicum. While the current practice exposes the students to the different areas in psychology, the enhanced practicum exposes them to their chosen field of interest. This approach already simulates the real scenario of their professional life—the practice of their profession—and also avoids dissatisfaction and problems of job mismatch in the future. Similarly, this will likely increase their appreciation for the psychology profession and its contribution to human growth and development and nation building.

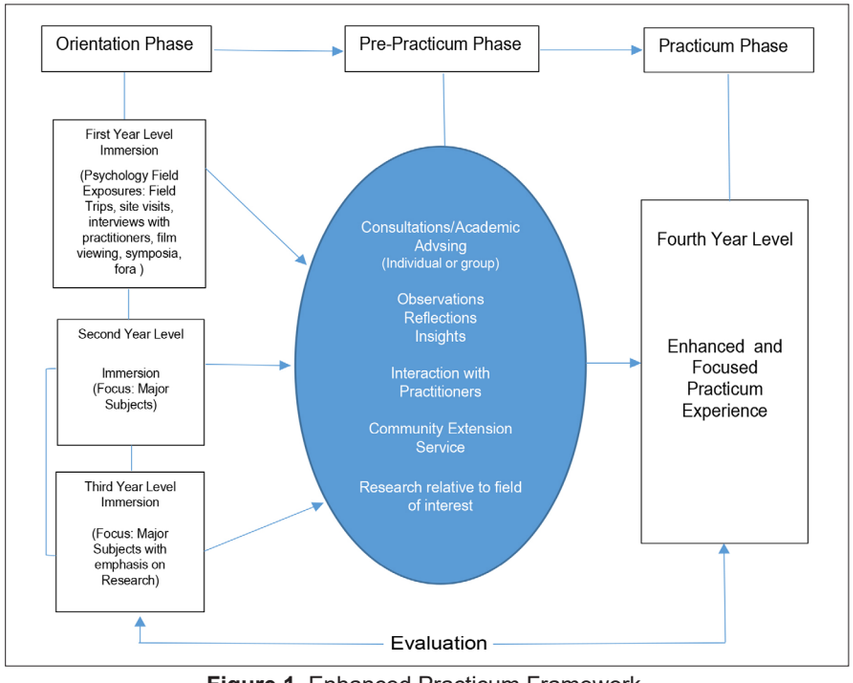

Figure 1. Enhanced Practicum Framework.

In essence, the proposed framework presents a sequential nature of the supervised field experience that starts from the orientation phase consisting of the gradual introduction of psychology as a distinct discipline to students at each stage or year level, with each year level having appropriate immersion activities, and culminates with the actual practicum phase during which students are expected to readily engage in a kind of a supervised field experience that provides the appropriate transition between academic life and future career. Congruent with the Philippine Qualifications Framework, the proposed enhanced practicum framework affords students to narrow down their interests, build up their skills along the way, and be exposed to diverse and relevant supervised activities that are all geared towards equipping them with the necessary knowledge, skills, attitudes, values, and competencies that are at par with global standards as well as helping them become more aware of their role and identity as future professionals who are expected to contribute to the improvement of human and societal conditions.

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