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# 1st REGIONAL REDI CONGRESS

RESEARCH • EXTENSION • DEVELOPMENT • INNOVATION

# BOOK OF ABSTRACTS

"Flourishing in the New Normal through Research, Extension, Development and Innovation"

October 29, 2021 via Zoom

ROMBLON STATE UNIVERSITY 1915 PHILIPPINES

REDI

RESEARCH • EXTENSION • DEVELOPMENT • INNOVATION

**1st Regional REDI Congress 2021**
Abstracts of the 1st Regional REDI Congress organized by
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Odiongan, Romblon, 5505

Virtual Research and Extension Congress | 29 October 2021


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The REDI Congress is being held annually and will release one Book of Abstracts each year.

# TABLE OF CONTENTS

**EXTENSION**

# Message of the President

We now live in a world that would have been called a realm of science fiction, just merely a decade ago. Artificial intelligence, data science, smart agriculture, new normal education, business, logistics, machine learning, and the Internet of Things, to mention a few, are revolutionizing and changing dramatically. We are growing tremendously in important areas such as information technology, engineering, e-governance, e-commerce, education 4.0, community extension, and many aspects of our everyday lives. All of these are fruits of R&D activities that gave rise to the Fourth Industrial Revolution.

This year, we are again to unfold one of the cornerstone annual events in Romblon State University. As an institution eyeing to become a research-based SMART university, the need to revolutionize our academic, scientific, and economic programs is indispensable for engendering growth and accelerating changes far greater than our visions before. This year, we have been challenged by this Covid-19 pandemic, but our fervent spirit to wage the battle against this unseen war is unstoppable. Despite these challenges, we continue to thrive as an island University in terms of research, development, and extension evidenced by our numerous completed researches, publications in journals of sterling reputation, and intellectual properties protected, filed and explored for potential commercialization. Today is the celebration of every researcher's and extensionist's victory, a celebration of our collective achievement that is perfect for this year's theme, "Flourishing in the new normal through Research, Extension, Development, and Innovation".

**MERIAN P. CATAJAY, MANI, ED.D., CESE**
University President
Romblon State University

In this 1st Regional REDI Congress, I encourage everyone to become advocates of the scholarly pursuits in our respective institutions. Through that, we can make significant contributions to knowledge building through the confluence of digital, biological, and physical innovations and emerging technologies. We are society's vanguard for development, transformation, and truth. Even though the road to truth-seeking is bumpy, let us sustain our motivation by keeping our minds busy in learning new things. Let us embrace the principles of public service attuned to our ever-increasing drive for academic, scientific, and economic advancement.

As this congress endeavours to highlight our various R&D efforts that flourished in the new

normal, I would like to personally congratulate the Research, Extension, Development, and Innovation unit for the untiring dedication and commitment to one of the university's ten-point agenda, excellence in research and extension. I am praying for the success of this congress, and I wish everyone an intellectually stimulating exchange of ideas and a meaningful experience of virtual collaboration, all in our continuous effort to "Serve with honor and excellence."

# Message of the Vice President for Research, Extension, Development, and Innovation

It is an opportune time to celebrate the accomplishments of our researchers and extensionists in their different fields of endeavor. It is gratifying to realize that even in the midst of this battle against the invisible Covid-19, we are learning to thrive as institutions of Research, Extension, Development, and Innovation.

No matter how much we can do by ourselves on the regional or national level, whether it be on research, development, or extension, it is always never enough, thus a continuous quest for new knowledge is encouraged. In the spirit of true cooperation, we in this region, proud of nurturing past and present civilizations, cultures, and scientific revolutions, must join in an action-oriented effort to solve the problems that beset the economic, academic, and scientific forefronts.

It has become commonplace to say that research is the heart of the university and that the dedication of the REDi unit in the attainment of the university's goals towards becoming a research-based academic institution is unequalled. As the Vice President for Research, Extension, Development, and Innovation, I am immensely grateful to the R&D and Extension units for their commitment to meet or even surpass their individual targets and deliverables. This conference is the proof of your undying support to sustain the extension and research environment of the university.

I am hoping that this scholarly pursuit of knowledge be an avenue towards a more meaningful and healthy collaboration between universities in the region. I formally welcome all participants, guest, researchers and extensionists, as you carry with you the best wishes for the success of this Regional REDi Congress with a pleasant experience amongst us. All these undertakings are fully consonant with our mantra of serving with honor and excellence. Again, good day and advance Merry Christmas!

**BILSHAN F. SERVAÑEZ, Ph.D.**
Vice President
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1st REGIONAL REDI CONGRESS
October 29, 2021 via Zoom
"Flourishing in the New Normal through Research, Extension, Development and Innovation"
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1st REGIONAL REDI CONGRESS
October 29, 2021 via Zoom
"Flourishing in the New Normal through Research, Extension, Development and Innovation"
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1st REGIONAL REDI CONGRESS
October 29, 2021 via Zoom
"Flourishing in the New Normal through Research, Extension, Development and Innovation"
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1st REGIONAL REDI CONGRESS
October 29, 2021 via Zoom
"Flourishing in the New Normal through Research, Extension, Development and Innovation"
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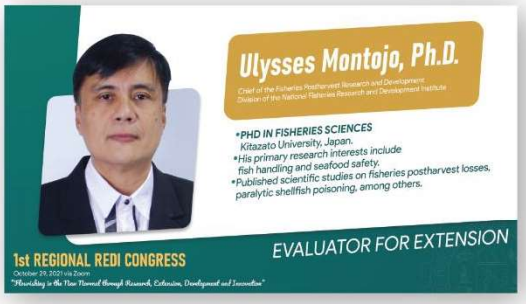
SOCIAL SCIENCES, HUMANITIES AND EDUCATION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1st REGIONAL REDI CONGRESS
October 29, 2021 via Zoom
"Flourishing in the New Normal through Research, Extension, Development and Innovation"
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October 29, 2021 via Zoom
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# ENVIRONMENT, AGRICULTURE, AND NATURAL SCIENCES

# Beach Forest Communities of San Agustin, Romblon, Philippines with Notes on Coastal Threats

*Xyrra Jeremiah C. Mazo, Shella Mae Mangao and Jeric B. Gonzalez*
*San Agustin Campus, Romblon State University*

Beach forest is a plant community growing along sandy shores up to high tidal zone which is exposed to salt spray. The coastal plains of the Philippines were among the first sites opened for human settlement and sprouting of communities has displaced beach forests and mangrove swamps. The growing intensity and frequency of weather disturbances brought by changing global climate highlight the important role of beach forests as bio-shield for vulnerable coastal communities. Sad to say, beach forests continue to disappear due mainly to conversion into human settlements and wanton harvesting for fuel wood and medicinal plant parts. At present, no study has been conducted on the beach forest communities in the municipality of San Agustin, Romblon. Thus, this study was realized. Survey was conducted in all barangays of San Agustin and identification was done using the work of Primavera and Montilijao (2017). A total of 38 species of beach forest plants belonging to 21 families were identified while the distribution of beach forest plants in San Agustin, Romblon varied in every barangay. Highest species richness was recorded in Cabolutan while the lowest record was in Camantaya. The Shannon Diversity Index of San Agustin was 2.53 (38 species) Diversity, Simpson Dominance Index was 8.73, Evenness Index was 0.70. Five major coastal threats recorded in the beach forest areas around San Agustin, Romblon and these includes, erosion (root exposure, scarp), garbage, seawall, road widening, infrastructure developments such as beach resort and also converted into summer houses.

*Keywords:* coastal threats, distribution of beach forest, diversity of beach forest, mapping, species composition

*Xyrra Jeremiah C. Mazo*
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# Gillnet Fishers' Coping Strategies in Household Food Insecurities

*Vincent Jay H. Gado*
*San Andres Campus, Romblon State University*

The study focused on gillnet fishers' coping strategies in the face of household food insecurity. Twenty respondents were chosen at random from each barangay, for a total of 140 respondents. The collected data were counted, analyzed, and interpreted using descriptive statistics, and a significant difference was found using the correlation test. According to the study's findings, the highest educational attainment of San Andres' fisherfolk was mostly high school level or high school graduates whose current work was copra making, aside from fishing. The highest monthly income of the fisherfolk can be up to P3,000, while the highest number of individuals per household ranges from 4-6. In terms of temporal exposure, the fisherfolk were exposed to food insecurity during the onset of habagat, or the southwest monsoon, and during typhoons. The fisherfolk's common coping strategy to support both financial and food needs was to seek government assistance to deal with food insecurity. The gillnet fishers' coping strategy for meeting their financial needs was to sell domesticated animals while harvesting their backyard plants was their coping strategy for meeting their food needs. Furthermore, it demonstrated that there is no statistically significant difference in the coping strategies of gillnet fishers. Fisherfolk coping strategies are not primarily determined by individual household capacity (social profile) and exposure to food insecurity.

*Keywords:* fisherfolk, food and financial strategies, household insecurities, southwest monsoon, temporal exposure

*Vincent Jay H. Gado*
*RSU San Andres*

# Effects of Anthropogenic Activities on the Coral Reef Ecosystem in Agtongo and Cajimos, Romblon, Romblon

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One of the contributing factors in the degradation of the coral reef is anthropogenic activity in the upland. And one of the examples of that activity is the marble quarry in Agtongo, Romblon. To determine if such activity has a negative impact on the coral reef ecosystem in Romblon, an assessment of the coral reef communities and water quality had been done. Photo Transect Survey, Fish Visual Census, and Water Quality Test were done in Cajimos Fish Sanctuary and Agtongo Coral Reef that is adjacent to the marble quarry. The study revealed low coral cover in both areas. Diverse, high biomass, and abundance of fish assemblages were observed in Cajimos Fish Sanctuary compared to coral reefs adjacent to the marble quarry. High macroalgae cover was observed in the Agtongo coral reef due to the low abundance of herbivore species. Both sites failed in the TDS test and were positive in the presence of coliform and E. coli. Thus, the marble quarry in Agtongo, Romblon directly affected the status of the reef communities of Cajimos Fish Sanctuary and its adjacent coral reef. The quarry released effluents that have a negative effect on the coral cover of both reef areas. Such chronic anthropogenic disturbances on coral reefs can shift benthic community composition away from hard corals and toward macroalgae. Thereby, it recommends the total closure of the mining to save the Agtongo Sanctuary in Romblon, Romblon. In addition, another water quality test should be done during the rainy season to gather a complete set of data for the water quality.

*Keywords:* Cajimos fish sanctuary, marble quarry, water quality, coral reef status, fish abundance and biomass, trophic structure

*Bernie G. Mantes*
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# Substrate as an Influencing Factor in Echinoid Distribution and Abundance

*Vincent Jay H. Gado*
*San Andres Campus, Romblon State University*

The Philippines has 210 recorded echinoid species out of the total of 950 found in the world's oceans. Observations showed that substrate type is one of the factors that influence the distribution of echinoid species. The primary goal of this study is to determine whether substrate types have a significant impact on the distributions of echinoids in Ferrol, which includes identifying different species and substrate types found in coastal areas. Ferrol was chosen as a sampling site due to a lack of recorded baseline data on the occurrence of echinoid species. The results of hypothesis testing on the influence of substrate types on the abundance of echinoid species using One-way ANOVA are presented. The abundance of echinoid species per substrate type averages 6.08±0.26. The null hypothesis was rejected because there was a statistically significant difference between the groups was determined by One-way ANOVA ($F(10,1294) = 3.345$, $p=0.000$), and it was concluded that substrate types have a significant influence on the abundance of echinoid species in Ferrol, Romblon. The Tukey HSD post hoc test was used to determine which substrate type has a significant influence. This will support the study's finding that substrate types have a significant impact on the distribution of echinoid species in Ferrol, Romblon.

*Keywords:* conservation, diversity, dominance, echinoid habitat, sea urchins

*Vincent Jay H. Gado*
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# Mount Pinatubo Crater Lake Current Ecological Condition

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The goal of the study was to determine the current ecological state of Mt. Pinatubo Crater Lake in Central Luzon, Philippines. Temperature, DO, pH, salinity, ammonia, nitrite, turbidity, alkalinity, and TDS were among the physico-chemical water characteristics measured. The composition of phytoplankton, zooplankton, insects, mollusks, and birds were also observed. The diversity and quantity of littoral plants were evaluated. Mt. Pinatubo crater lake temperature ranges from 25.01 – 26.65 oC, DO ranges from 5.97-8.07 mg/L, pH ranges from 6.65-6.96, salinity ranges from 1.2-2.0, NH3 was <0.01, (NH3-N) ranges from 0.01-0.02, nitrite was <0.01, turbidity ranges from 3.5-946 NTU, alkalinity ranges from 332-364 mg/L CaCO3, and TDS ranges from 2.33-2.40 g/L. The lake's physicochemical parameters were within acceptable limits for warm-water fish culture. It was 928 meters above sea level. Four species of insects were identified in the littoral part such as damselfly, tiger beatle, cockroach, and net-winged beetle. The backswimmer was the only bug found in the aquatic portion. The mollusc *Balamocochlis spp*. and *Tarebia invieta* were found. Pacific swallow bird (*Hirundo sp.)* was also spotted flying over the water of the lake. The lake contains seven phytoplankton groups. Dinophyceae, Bacillarophyceae, Rhapidiophyceae, Euglenophyceae, Cryptophyceae, and Charophyceae were the most common. Zooplankton such as Daphnia and Copepod were also found. The dominant cattail has clumped dispersion in Morisitas Index. Littoral plants have their own realized niches as showed in Chi-square test of independence. Some plants found only in a particular transect and quadrats and they were dependent to the area.

*Keywords:* diversity index, phytoplankton, volcanic lake, water quality, zooplankton

*Miguel D. Visca Jr.*
*RSU Santa Fe*

# The Community Structure of Marine Macrophytes of Carmen Bay, Romblon, Philippines

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*San Agustin Campus, Romblon State University*

The marine ecosystem like seaweeds and seagrass beds is one of the underrated research areas in Romblon. The majority of the researchers' eyes across the country were focused on the terrestrial, particularly in Sibuyan Island. Although Carmen Bay is located in a critical corridor passage in the Philippines, studies on its marine macrophytes biodiversity are scant. Hence, this study was realized. The present study was conducted to determine marine macrophytes' composition, diversity, and dominance, specifically seaweeds and seagrass in Carmen Bay, Romblon. Based on the study results, the shallow water of Carmen Bay in Romblon has 92 species of marine macrophytes, including the two new records of red algae species to the Philippines and an additional 34 new records to the province. A possible two additional species to the country were discovered. Carmen Bay's substrates dictate the dominance of seagrass species to the substrate cover of the bay. Many notable seaweed species that may be investigated further were recorded in Carmen Bay. Economically valuable species with potential for commercial cultivation were also present in the surveyed sites. This study recommends conducting another survey during summertime as well as in the deeper areas of the bay. A regular monitoring and expanding area for assessment are thus crucial for furthering studies on biodiversity and discovering uncommon seaweed species in the area and the province. Utilization of the wild population of commercially essential species in developing new strains for the aquaculture industry is recommended.

*Keywords:* Carmen Bay, community structure, marine macrophytes, species composition

*Jeric B. Gonzalez*
*RSU San Agustin*

# Distribution and Abundance of Cowries in Bugnayan and Kuliatan Marine Protected Areas at San Joaquin, Iloilo, Philippines

*Godwin O. Marcelino*
*San Andres Campus, Romblon State University*

The cowries are collected from rocky intertidal areas of Bugnayan Marine Protected Areas at barangay Lawigan and Kuliatan Marine Protected Areas at barangay Sinogbuhan, San Joaquin, Iloilo to determine the different species and the distribution and abundance of cowries. The intertidal areas of MPAs was set perpendicular and surveyed using the wandering transect-quadrat method using a 50x50 cm quadrat where are divided into 25 10x10 cm areas. Three species of cowries identified in Bugnayan MPA's and two species in Kuliatan MPA's. The Shannon diversity index show that in Bugnayan MPA's have a higher result (0.69) in diversity than in Kuliatan MPA's (0.64). Both two MPA's have the same rocky-coral bottom with some patches of sandy substrates which the cowries are present within 10 meters beyond from the base waterline during low tide in the rocky intertidal area and with the estimation depth of 1.5 to 2.0 meters. Cypraea caputserpentis dominated the abundance in the two MPA's followed by the Cypraea tigris, while the Mauritia depressa was rarely found in Bugnayan MPA's.

*Keywords:* cowrie gleaning, Cypraeidae, Cyprinids diversity, dominance, evenness

*Godwin O. Marcelino*
*RSU San Andres*

# The Status of Giant Clams in Shallow Water of Carmen Bay, Romblon, Philippines

*Jeric B. Gonzalez and Jennifer M. Olivay*
*San Agustin Campus, Romblon State University*

The previous study of giant clams in Romblon was conducted several years ago. Only a small part of Carmen Bay was part of this study. Hence, this study was realized. This study aims to assess and update the status of giant clams in the shallow water of Carmen Bay, Romblon, Philippines. The survey was conducted last January 2021 to March 2021. All giant clams inside the 50x10 meters transect line in shallow water were identified, counted, and measured. A total of 7 species were found in Carmen Bay. A new locality record of *T. noae* was discovered. Thus, the Romblon is home to this rare and cryptic giant clam species. The prolific population of T. crocea in Carmen Bay was observed. The population of T. squamosa, H. hippopus, and *H. porcellanus* in the bay is imperiled. The absence of live *T. gigas* and the presence of empty shell in the shallow area might indicate localized extinction of the species. The population density of giant clam inside the sanctuary is significantly high from the non-protected area in Carmen Bay. All species are matured and ready to spawn except from T. squamosa. All giant clams in Carmen Bay are endangered.

*Keywords*: giant clam, population, size structure, Carmen Bay, endangered, *T. noae*

*Jeric B. Gonzalez*
*RSU San Agustin*

# Reproductive and Nursery Performance of Asian Catfish (*Clarias macrocephalus* Günther, 1864), African Catfish (*Clarias gariepinus* Burchell, 1822) and their Hybrids

*Rick Vincent S. Liberato and Karl Marx A. Quiazon*
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This study determined the spawning performance of Asian *(C. macrocephalus)* and African *(C. gariepinus*) catfishes induced with CPE, fertilization rate, hatching rate, and larval quality, as well as the nursery performance of Asian and African catfishes and their hybrids. This study was composed of three (3) phases. The ovulated eggs in Phase 1 were used to conduct the Phase 2. Catfish larvae from the hatched fertilized eggs incubated in basins were used to conduct the Phase 3. The use of CPE successfully induced ovulation in all experimental brood fish. African catfish recorded the shorter latency period (11.71 hours ±0.04) and higher relative fecundity (139.20 eggs/g BW±3.62) compared to Asian catfish. Asian catfish obtained the highest fertilization rate (77.84 %±1.51), but not significantly different from female Asian x male African hybrid (73.60 %±2.82), and obtained significantly higher hatching rate of (62.16 % ±4.81) as compared to other treatment groups. The reciprocal hybrid (male Asian x female African hybrid) registered significantly higher abnormality rate (33.33 % ±9.13) and lower fertilization (12.77 %±1.88) and hatching rate (14.67 %±1.8). In Phase 3, the mean weight gain (7.3 mg±0.92; 14.33 mg±1.66) and specific growth rate (10.9 %±0.38; 8.35 %±1.16) of hybrid catfish was comparable to that of African catfish. Hybrid catfish recorded significantly better FCR (2.37 ±0.34; 2.15±0.22) and higher FCE (43.91 %±6.29; 47.72 %±5.56) compared to Asian catfish and comparable to African catfish. Result showed positive heterosis in survival after the 14-day culture nursing period and growth during the nursing stages of the study.

*Keywords:* growth performance, heterosis, hybrid, induced spawning, larval quality

*Rick Vincent S. Liberato*
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# Amending Effect of Biofertilizer on Corn (*Zea Mays* L. 'IPB Var 6') Treated with Elevated Levels of Cadmium

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Corn (*Zea mays* L.) ranks second to rice as the most important crop in the Philippines. Cadmium (Cd) is a toxic heavy metal and its continuous entry into the food chain makes it a health concern. Industrial wastes and application of biosolids and fertilizers, especially phosphorus, contaminate agricultural soils with cadmium. The present study investigates the amending effect of biofertilizers; namely, MykoVAM (arbuscular mycorrhizal fungi), BioN (nitrogen fixing bacteria), and Trichoderma Microbial Inoculant (TMI, a biocontrol agent) on corn 'IPB Var 6' treated with various levels of Cd (0, 0.3, 0.5, 0.8, 1.0 and 3.0 mg/L) under greenhouse conditions. Biofertilizer treatment significantly masked the toxic effects of Cd by improving root dry weight (BioN and TMI) and plant height (TMI) at 5 and 10 days after sowing. Bioconcentration of Cd was observed more in the roots than shoots under BioN and TMI indicating a regulated transport of Cd. In general, the biofertilizers were able to ameliorate Cd-treated corn (IPB var 6) in the order of: BioN > TMI > MykoVAM.

*Keywords:* biofertilizer amendment, cadmium bioconcentration, *Zea mays* L. 'IPB Var 6'

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# Antibacterial Potential of Aqueous Extract of *Sonneratia alba* from Pocket Mangrove Forest Romblon State University San Agustin Campus

*Jeric B. Gonzalez and Claudine M. Fronda*
*San Agustin Campus, Romblon State University*

*Sonneratia alba* plant parts (leaves, fruit, and bark) were investigated to evaluate the antibacterial activity against bacterial pathogens. The antibacterial activity of crude extracts of Mangrove Apple plants parts was evaluated by disc diffusion method. The leaves, fruit and bark of S. alba exhibited zones of inhibition both in *Staphylococcus aureus* and *Escherichia coli*. Among the five treatments tested for S. aureus, fruits have the highest zone of inhibition. Meanwhile, the crude extracts from S. alba that were tested towards *E. coli*, fruits showed highest zone inhibition. Majority of the treatments were classified as bacteriostatic. Based on the result of the study Gram-positive bacteria, S. aureus was more susceptible than Gram-negative bacteria, E. coli. Therefore, it was concluded that Mangrove Apple extracts from pocket Mangrove Forest of RSU-San Agustin Campus, Cabolutan, San Agustin, Romblon, Philippines, exhibited antibacterial potential towards bacteria. And might indeed be used in the pharmaceutical industry and used as traditional medicine by the locals. This study recommends an extraction of other organic solvents used by other groups of mangrove species and utilization of other test microorganisms for further results on the antibacterial potential of mangrove plant against pathogens. In addition, elucidation of the compounds responsible for the bioactivities including identification, sufficient isolation and purification, and also the analysis of antibacterial mode of action should be done for natural drug development in the future.

*Keywords:* antibacterial activity, bacteriostatic, *Escherichia coli, Staphylococcus aureus,* susceptibility

*Jeric B. Gonzalez*
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# Riparian Forest Vegetation Quality of Major River systems of Tablas Island, Romblon: A Preliminary Approach for Sustainable Natural Resources Management

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Riparian forests are one of the most valuable ecological elements of the river system, and vegetation quality status has global importance due to the numerous benefits it provides. A healthy and well-functioning riparian forest provides the ecosystem services such as the hydrological and biogeochemical cycles, protecting water quality, and providing dynamic habitats for a rich diversity of flora and fauna. The study's main aim is to evaluate the ecological condition of riparian forests in major rivers in Tablas Island, Romblon, using the Riparian Forest Evaluation (RFV) index. The spatial continuity of the forest (longitudinal, transversal, and vertical) and the regeneration capacity of the forest were evaluated using the RFV index. Alternating transect lines of 150 meters were laid out in headwater, midstream, and downstream of the Parpaguha River, Bañadero River, and Humagikhik River. Results revealed that CALSANAG WFR riparian areas are generally considered fair or sub-optimal conditions implying that riparian zones are less suitable than the optimal condition caused by the minimal yet prevalent ecosystem disturbances. The upstream possesses a good riparian habitat condition considering the longitudinal, transversal connectivity, and regeneration capacity, but the midstream has a poor state. The significant number of agri-farms in the midstream could be contributing factors resulting in deteriorating conditions. It is highly recommended that the locals or residents nearby the riverbank be actively involved in the conservation and restoration activities for sustainable and productive riparian ecosystems.

*Key words:* riparian forest; RFV index, alteration, riparian quality

*Amelyn A. Formilleza*
*College of Agriculture, Fishery and Forestry*

# A New Species of Spotted Orb-Weaving Spider *Neoscona guitingguiting tansingcoi* n.sp.

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A new species of orb-weaving spider, *Neoscona guitingguiting tansingcoi* n. sp. from Mt. Guiting-guiting, Sibuyan Island, Romblon, Philippines is described and photographed based on three females. It closely resembles *N. vigilans* (Blackwall, 1865) and *N. punctigera* (Doleschall, 1857) but differs from both in the following features, namely, (1) slender scape with its anterior tip more pointed viewed ventrally, (2) middle of scape covered with relatively short hairs in three longitudinal rows, (3) basal body of scape short and subquadrate, (4) oblongate and large spermathecae moderately converging towards apex, (5) longer ratio of sternum length/width =1.19, (6) presence of a large squarish yellow spot in the abdominal venter, and (7) leg spination. It represents the 18th species of Neoscona from the Philippines.

*Keywords:* Araneae, *Neoscona guitingguiting* tansingcoi new species, Sibuyan Island, spotted orb-weaver, taxonomy, Neoscona, Orb-Weaving, Mt. GuitingGuiting, Sibuyan, Romblon

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# Riparian Vegetation Dynamics in Protected Area of Tablas Island, Romblon: Basis for Restoration and Conservation Planning

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The study aimed to evaluate the tree assemblages of 9 sampling points of riparian zones (San Andres, Calatrava, and San Agustin) within a protected area in CALSANAG WFR, Tablas Island Romblon. About 27 sampling plots measuring 10x50m2 were randomly established, where the vegetation or tree species were evaluated and measured. Mensuration parameters such as diameter at breast height (dbh) and population density were calculated using the Point-Centered Quarter Method (PCQM). Diversity indices (Shannon, Simpson's, and Evenness index) were generated using biodiversity software with the data on the number of species and abundance for each sampling quadrat. A total of 237 morphospecies within the accumulative area of 1.35 -ha plot composed of 57 endemic species belonging to 49 genera and 32 families were recorded from all sites. The species from Moraceae (36%) family has the highest number of tree individuals. Overall, species abundance, richness, and diversity do not differ significantly across the riparian zones. Even though the area is within the protected area, constant human-induced disturbance and agricultural farming activities caused only small trees with dbh of <10cm to dominate the riparian forest stands, accounting for 61 percent of individuals. The low and poor growth of riparian tree species needs serious action to conserve and protect the ecologically important species and to prevent local extinction of sensitive indigenous species. The local Government Unit should implement religiously national policies and guidelines regarding settlement and agri-related activities along the riparian buffer zones within the protected area.

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# Diversity and Morphology of Edible Yam (*Dioscorea spp*) in Tablas, Island, Romblon, Philippines

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Yam plants (*Dioscorea spp*) are either wild or cultivated that propagate naturally and highly productive crops even in marginal areas adapted to diverse conditions. These crops played an important role in the lives of many people as a staple food which is the basic necessity in life and formed part of the diet component to humans, medicines, and feedstuff to livestock/poultry. There is no such study on the morphological characterization of edible yams in Tablas Island, province of Romblon that is why this study was employed for yam accessions. A total of 70 yam accessions were assessed using the descriptors for yams proposed by IPGRI (1997), and the National Plant Genetic Resources Laboratory (NPGRL) (Los Banos IPB) to characterize the Yam (*Dioscorea spp*). Data on morphological diversity were analyzed using descriptive statistics such as percentage and frequency. Eighty-six morphological characters were used in morphological characterization and in assessing the genetic diversity of the accessions using the Shannon Weaver Index. Frequency distribution per trait was determined for the calculation of diversity. Hierarchical Cluster Analysis was used to determine the cluster membership of the different yam accessions. The mean H' of the qualitative traits and quantitative traits was high (H= 0.62 and H=0.83 respectively). The qualitative and quantitative traits have shown normal frequency distribution indicating a wide variation of yam accessions in Tablas Island. The accessions were clustered according to their closest traits and come up with four clusters. Cluster 2 had the highest number of cluster membership.

*Keywords:* accession, characterization, cluster analysis, hierarchical, morphology

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# ENGINEERING, DEVELOPMENT, AND INNOVATION

# Design and Development of REDi Monitoring System of RSU's Funded Researches

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Document monitoring has become a problem in various organizations. Over the years, various strategies have been developed to deal with document monitoring, leading to the development of software applications for document management. These applications solve the problems of document creation, document retrieval, distribution, document workflow, email management, and document security. Apart from these features, it is necessary to gain efficiency and effectiveness in document monitoring. This paper illustrates the design and development of REDi Monitoring System of RSU's Funded Researches. This system is a comprehensive tool for managing online submission and editorial workflow of researches of the University. The utilization of Systems Development Life Cycle's Agile Model in developing the software was carried out and implemented with Laravel Framework and MySQL server. The result of the developed system shows a simple and effective graphic user interface, ensuring privacy for users and effective document monitoring. Overall, the system will give an advantage to the Romblon State University REDI office as it will no longer have to bother about the manual tracking of the movement of the document from online submission and approval of funded researches.

*Keywords:* agile development, document monitoring, Laravel, MySQL server, online submission, system development life cycle

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# eSAM: Attendance System Using QR Codes in Romblon State University- Cajidiocan Campus

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Checking students' attendance uses technology to improve it from manual tasks to automated. Attendance Management System has played a big part in taking attendance processes that helps the school in generating attendance report automatically. This paper proposes a system that is based on server and mobile and a QR code, which is shown to students at the beginning of lectures. The system generates QR Codes that contain the information of the course, section, subjects, date, and IN/OUT. The students will need to scan the QR code using the application installed on their mobile phones and send them to the server in order to confirm their attendance. It requires the students to capture the facial images and send it to the server to store them in the system. The system generates summary reports of the students by subjects or by section every day or every end of the month to help the instructors and the school to provide a record of the students regarding their attendance record that minimize the use of paper. The students receive email notification/confirmation of successfully attending the class on a particular date. Using the system, it was concluded that the instructors or admin of the school can generate summary reports of the students regarding their attendance status including the date, time in/out, number of present, absent and late in every subject or every section handled by the instructors and provide copy of the summary reports in excel or pdf format.

*Keywords:* attendance system; eSAM; mobile phone; QR codes; summary reports

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# Design and Development of RSU-Romblon Campus Data Warehouse

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The objective of accreditation is to guarantee the quality of higher education. The institution needs the complete documents for the precise specification of the information prior to review by the expert. Therefore, academic documents must be effectively preserved to facilitate compliance with accreditation requirements. However, the data generally comes from different sources, of various types, unstructured and distributed. This study designed a data warehouse to incorporate all the documents to prepare a good academic document for college accreditation. The data warehouse consists of five steps introduced by Simoes. This method is used to build a data warehouse based on the accreditation assessment with an emphasis on academics. Systems Development Life Cycle model was used in the development of the system. The ISO/IEC 25010:2011 standard was used to evaluate the acceptability of the system using the eight (8) characteristics. However, only applicable sub-characteristics such as suitability, efficiency, compatibility, usability, reliability, security, maintainability, and portability were applied to evaluate the system. This standard ensures that the user's experience with the system was met, and the important features like uploading, viewing, and system maintenance by the administrator, were at their most excellent functional operation. Thus, the researcher presents the Design and Development of RSU-Romblon Campus Data Warehouse using the internet to provide better services to the institution through an online website.

*Keywords:* accreditation, building a data warehouse system, data warehouse, systems development life cycle, system quality model

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# Bridging the Haves and the Have-nots: Bolstering Resource Sharing in the New Normal through Romblon State University's Learning Hub Innovation

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Romblon State University, through the Learning Resource Center, is unabated to fulfil its goal, to maximize support system for teaching, learning and research through sustaining efforts in resource sharing and networking activities with other institutions and organizations. As far as innovation is concerned, establishment of learning hubs across institution's colleges and campuses and even to the community is such a promising project since it purports to address the pressing demand of this unprecedented situation in educational system. This is one of the university's ways to adopt flexible learning approaches in today's challenging times. Methodology employed were survey and interview in order to determine its feasibility, progress and effectiveness. Pilot implementation was also done in order to obtain baseline data for the continuous operational considerations. Results showed that though challenges are inevitable, respondents are still hopeful about the affirmative outcome it may eventually bring. Notably, students involved in the pilot implementation were very satisfied with the benefits they gained from this project. Since the project is still on-going, more initiatives are still undertaken to fully optimize its potential and keep bridging the gaps between the haves and the have-nots.

*Keywords:* flexible learning, innovation, learning hubs, new normal, resource sharing

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# Design and Implementation of Arduino Based and Solar-powered Drip Irrigation System

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Water plays a vital role in our daily lives. The potential lack of water in the future is possible so the proper utilization of water starting in this era is very significant. As of now, agricultural industries utilize the highest percentage of water withdrawal at the global level. Farmers irrigate the crops without knowing what plants are needed which causes water to run off and evaporate. Therefore, knowing the specific water requirement of the plants is very essential before irrigating them. In this study, an automated and solar-powered drip irrigation system was developed and implemented. The research study selected a loose-leaf lettuce (*Letuca sativa L.)* as a test crop planted in the 6m x 18m greenhouse divided into 3 plots. Every plot was divided into 4 blocks with 24 lettuce seedlings planted in each block. It consists of 12 blocks where half of it was irrigated using the conventional method and the other half was irrigated using the developed automated drip irrigation. A draw lottery method is applied in selecting the area where conventional and automated drip methods are located to compare the water savings effectively. The development of the automation system is based on the conventional method in a period of irrigation but in terms of water quantity it is based on the moisture content sensor where the sensor settings are based on the recommended water requirement of lettuce and the sensor was calibrated based on the standard moisture meter. A drip emitter was used in this study since this technology provides less water run-off. This development also uses solar energy and the calculation of solar PV size was conducted. Industrial-grade materials were used in preparation for the actual field application. Finally, this study revealed that this technology could save up to 75% of water without affecting the growth and yield of plants.

*Keywords:* arduino, conventional method, drip irrigation, solar-power, soil moisture

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# Synthesis, Characterization, and Application of Synthetic Graphite-Polyurethane (SG/PU) Composite as an Anodic Electrode Material for Single Chamber Microbial Fuel Cells (SCMFCs)

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[2]*Technological Institute of the Philippines*
[3]*San Miguel Aerocity, Inc.*

This study was conducted to synthesize synthetic graphite/polyurethane (SG/PU) composite to be used as anodic electrode material for single chamber microbial fuel cells (SCMFCs). The synthesized SG/PU composite was characterized using the four-probe technique, scanning electron microscopy with energy-dispersive x-ray (SEM-EDX), and Brunauer-Emmett-Teller (BET) physio-adsorption test. For comparison, the SG/PU composite anode and an unmodified carbon cloth (CC) were individually implemented in a two-electrode set up inside a single chamber microbial fuel cell (SCMFC) inoculated with waste activated sludge (WAS) and untreated domestic wastewater as feedstock. A series of polarization curve measurements were conducted to observe the progress and behavior of the cells, as well as in determining their performance in terms of power density, current density, and overall internal resistance. Results show that the SG/PU-based SCMFCs achieved a maximum power density and current density of 2.14 mW/m2 and 20.68 mA/m2 while CC-based SCMFCs only achieved 0.270 mW/m2 and 3.29 mA/m2, respectively. At maximum power transfer (MPT), the SG/PU-based MFCs performed at 1.091% Coulombic efficiency while CC-based MFCs at 0.1907%. This improved performance using the SG/PU Composite is due to its rougher surface morphology and stability despite having a 32.56% lower BET surface area than the unmodified CC anode. These findings suggest that the use of graphite-polyurethane composites can enhance the performance of SCMFCs that uses untreated domestic wastewater as feedstock.

*Keywords:* anode modification, composite electrode, domestic wastewater, graphite-polyurethane, single chamber microbial fuel cell

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*College of Engineering and Technology*

# Upgrading the Control Device System of the Ventilation Units in the College of Engineering and Technology Building

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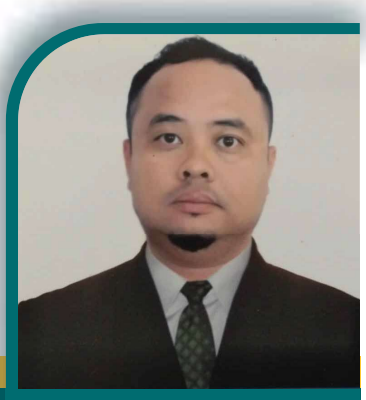
The study aims to evaluate and upgrade the control device of existing ventilation units-airconditioning and fans set up in the College of Engineering and Technology rooms creating a more comfortable, productive work and study environment. The improvement of the control device is through integrating a compact intelligent device control system that automatically controls the power operation of the ventilation units based on a predetermined room temperature, occupants' comfort, and movements inside the rooms. The developed device eradicates the need for manual control and keeps the airflow fresh thus reducing airborne hazards. The 12-in. x 8-in. x 4-in. portable control device comprises a microcontroller, PIR and DHT11 sensors, LCD, LEDs, control relays, and an output socket outlet. The socket-outlet is where the existing ventilation units are plugging in. The experimental results showed that the smart control device effectively activates the ventilation units with 90% efficiency. On the other hand, the acceptability evaluation revealed that in terms of reliability, the employee respondents rated the control device 4.2 (excellent), 3.8 (excellent) for durability, 3.4 (very good) for safety and ease of operation. Meanwhile, the student respondents, in terms of reliability and durability, the average is 4.0 (excellent), 3.4 (very good) for safety, and 3.8 (excellent) for ease of operation. The outcome proved that using the developed model, the operation of the ventilation system has improved. Further, this technology may help eliminate fire hazards due to unattended ventilation units running thus, reducing energy consumption.

*Keywords:* compact control device, control device efficiency, control device for classroom ventilation, intelligent control device, evaluation smart control device



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*College of Engineering and Technology*

# AuPiggyMated: An IoT-Based Smart Pigpen for Cleaning, Monitoring, and Auto-Feeding of Hogs

*John Lorenz Vergara, Precious Zairah A Aguila, Jhon Mark M. Ramos and Jennie T. Fernando*
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A piggery is one of the traditional businesses that can be found in predominantly agricultural areas in different provinces. Raising hogs as a business requires manpower and lots of time since it entails regular monitoring. The owners have to regularly feed hogs to meet acceptable weight on the right time. Pig pens should also be cleaned frequently. Moreover, the weather condition is also a factor that affects hogs. If the weather is too hot, the owner needs to water the hogs. With this, the researchers developed the AuPiggyMated which aimed to automate the process of cleaning, monitoring, auto-feeding of hogs and notifying the caretaker through the SMS notification and web using the Internet of Things feature. It was developed using a Prototyping Model and different programming languages. The hardware of AuPiggyMated was powered by the Arduino Microcontroller which have GSM Module and ultrasonic sensor for sending the amount of the food tank in the container. Also, the system used electric water pump for controlling the water for drinking and cleaning of the pig pen. The humidity sensor detects the wind pressure which determine if the water pump needs to be tuned on to bathe the pigs. The system was able to notify the caretaker of the piggery regarding the condition of the hogs through SMS notification. It also freely feed the hogs in the right time according to the scheduled time. Cleaning of the pen and bathing of pigs were also done automatically. The project got an overall rating of 4.70 using ISO 25010 criteria. After testing the system, the system could still include devices that will distribute feeds to long feeders to become more practical. Future researchers could expand the scope of the study such as adding automation process of monitoring, cleaning and feeding the hogs.

*Keywords:* auto-feeding, cleaning, IoT, pigpen, prototype

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# PAK-BEAT: Game Development for Integrated Pest Management

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Gaming as a learning tool is not new concept in education since it evolved in recent decades as computer technology has become more common. More classrooms have chosen to implement games, particularly digital games in classrooms to help students learn subjects. Gamification allows learners to take active roles in learning and develop technological skills that are needed for their academic endeavors. Integrated Pest Management is the use of many compatible farm management practices to minimize pest population to a non-destructive level without extravagant use of farm chemicals. PAK-BEAT: Game Development for Integrated Pest Management is capable of providing concepts in growing and protecting vegetables through gamification. It provides ideas about good and harmful insects that affects the growth of vegetables. It offers knowledge about pesticides and how to gain high vegetable yield. The Prototyping Model was used during the development wherein they built, tested, and reworked the prototype to achieve system's objectives. The system was evaluated by 93 students and 10 professors using the ISO 25010 Software Metrics Evaluation consisting of eight criteria, Functional Suitability; Performance Efficiency; Compatibility; Usability; Reliability; Security; Maintainability; and Portability. The system was rated as Acceptable among the different criteria set. During the evaluation, the researchers concluded that the system helped the stakeholders in learning integrated pest management. It is recommended that the timing of infestation of different insects should depend on the growth stage of plants. The level of toxicity of pesticide in determining the effects on plants, animals, insect, and environment must also be considered.

*Keywords:* agriculture, android, gamification, integrated pest management, prototype

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# ViadiM: An IoT-Based Automated Viand Vendo Machine

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Food is an essential part of everyone's lives. It gives the needed energy and nutrients to be healthy and active. In buying foods most of the time there is a need to fall in line and wait for turn to be accommodated. The seller sometimes takes so much time for measuring and putting the viand in the plate. To resolve the problem, the researchers come up with Viand Vending machine. It aimed to offer convenience to the customer in buying viand by dispensing the viand after inserting sufficient amount in the machine. The project was developed using Prototyping Model and Arduino programming language. It is consisted of Arduino microcontroller, GSM module, Linear Actuator, Bill and Coin acceptor, and Coin Hopper which are connected and integrated with the Arduino Mega. The project got an overall rating of 4.60 using ISO 25010 criteria. The machine lessens the work of the viand vendor and the customer can buy viand immediately. It also gave a particular viand selected by the customer after inserting money in the money slot and automatically gave change to the customer. The ViaDiM could be used and transported in any location due to its portability, security and compatibility. After testing of the machine, it was recommended that the hardware components must be protected by enclosure, prototype must also be far from other interference like electric fan, refrigerator, and other devices and the casing should have strong foundation so it will not be damaged easily.

*Keywords:* arduino, IoT, prototype, vendo, viand

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# SUPERVISION, ADMINISTRATION, LEADERSHIP, AND MANAGEMENT

# Performance Appraisal of Selected Money Remittance Centers: Inputs to Improve Customer Satisfaction and Loyalty

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The study evaluated performance appraisal of three selected remittance centers in the Philippines as inputs to improve customer satisfaction and loyalty. The research focused on demographics (gender and brand names of the remittance centers) for performance evaluation purposes. The descriptive method with quantitative design was used with 360 respondents from the result of Slovin's formula at 0.05 margin of error. Survey questionnaire is the main instrument, validated by four clients of remittance center and financial institution. Likert's Scale was used as scoring instrument. Frequency and Percentage were used to determine the number of respondents needed in the study. While Weighted Mean was used to determine the average of responses of the respondents. The findings showed that male customers often send money transfer compared to female customers. There was no significant difference in the result of the survey regarding the performance appraisal of the three remittance centers. The respondents moderately agree on the performance of three remittance centers in the delivery of their services. There is no significant difference in the performance offered by the three selected Remittance Centers. The three remittance centers have the same level of performance and service. This research provides significant insights to the impact of the performance of remittance centers towards customer's satisfaction and loyalty, businesses, industry and the society.

*Keywords:* business management, descriptive-quantitative, money remittance, performance appraisal, Philippines

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# ATM Usage and Problems Encountered: Basis for Establishing Micro-Automated Teller Machine at San Fernando Romblon

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Banking services is one of the essentials in today's world. It enables someone to make financial transaction anywhere in the globe at the most convenient way. In the Municipality of San Fernando, Province of Romblon, ATM transaction is relatively growing in size. It can be manifested by establishment of Automated Teller Machine (ATM) and some Point of Sales (Micro) ATM. Government employees, educators, Pantawid Pamilyang Pilipino Program beneficiaries and Tertiary Education Subsidy beneficiaries are just among those individual who make transaction using ATM Card. The available ATM service provider cannot equate the growing demand resulting to unavailability of cash and long queue. This descriptive study was conducted utilizing self-made questionnaire to determine the extent of ATM Usage and the problems encountered by ATM holders in the municipality of San Fernando. Results reveal that most of the cardholders are unemployed and relying much to financial aid from the national government through 4Ps program with a monthly income of below Php 11,690. Withdrawal is the most frequent transaction amounting to Php 500 – Php 2,500 per transaction and usually happens when need arises. The data further shows that the main problem encountered by card holders is the limitation on the amount disbursed per transaction due to availability of funds and connectivity problems resulting in long queues.

*Keywords:* ATM, ATM services, banking, banking service, Micro-ATM

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# Levels of Managerial Problems among Cooperative Managers in Puerto Princesa City Palawan: An Input to a Mathematical Model

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The study aimed to determine the levels and predictors of professional, social and economic problems among managers in the cooperative organizations at Puerto Princesa City, Palawan with the end view of developing a mathematical model. The study made use of descriptive method of research. Descriptive statistics such as frequency distribution, percentage mean analysis and standard deviation were used in the statistical treatment of data which involved twenty-six out of seventy-four respondents. Majority of the respondents are male. Majority are married comprising 69%. Most are holders of baccalaureate degrees and majority have monthly income of Php 18,000 or below and Php 42,001 and above. Most are moderately satisfied in terms of work-related factor and dissatisfied in the other related factor. The level of professional problem experiences by respondents is moderate with overall mean rating of 3.87. The social experiences are also moderate with overall mean rating of 3.85. The economic problem experiences had overall rating of 2.85. The following factors singly or in combination predict the professional, social and economic problems of the respondents. Regression analysis was employed to determine predictors of professional, social and economic problem. The foregoing regression results based on standardized coefficients are expressed mathematically: Pp = 0.44 w – 0.57 f (professional); Sp = 0.52 w – 0.39 f (social); Ep = 0.89 a + 2.38 e + 0.71 w – 0.55 f (economic).

*Keywords:* cooperative organizations, managerial problems

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# Supply Chain Management Practices of DOST-Assisted MSMEs in Odiongan, Romblon

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This study was conducted to determine the supply chain management practices of micro, small, and medium-sized enterprises in Odiongan, Romblon. The population of this survey is limited to DOST-assisted MSME's that availed financial assistance, training, and seminars from the said agency. A questionnaire was used to collect data, and a five-point Likert scale was used to evaluate MSMEs' supply chain management practices. The instrument was distributed on the first week of August 2021, and data were retrieved from August to September 2021. Out of 28 entrepreneurs identified, only 21 responded, others ceased operations. The analysis showed that the majority of the entrepreneurs were engaged in manufacturing operations, with one to four employees, and had an initial capital of P54,999 and below. The entrepreneurs were implementing supply chain management practices to a moderate extent. They also experienced supply chain management challenges to a moderate extent and perceived the benefits of supply chain management practices in their business as fairly important. The entrepreneurs were more successful in strategic partnerships with suppliers in terms of performance. They were highly affected by the COVID-19 crisis, with more than 50 percent decrease in annual revenue. They also faced ground transport restrictions, trucking shortages, freight capacity shortages, flight disruptions, and warehouse congestion.

*Keywords:* micro, small and medium-sized enterprises (MSMEs), supply chain management (SCM), SCM-benefits, SCM-challenges, SCM-practices

*Ray Joseph G. Inocencio*
*College of Business and Accountancty*

# Marble Industry in the Time of COVID-19 Pandemic: A Rapid Assessment of the Impact of the Pandemic among the Marble Businesses in the Municipality of Romblon

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Creating a strategic action plan and sustaining excellent financial performance to keep a business afloat is one of the most challenging aspects of operating a company. The manner business owners manage their company determines its success. However, if the risk of financial failure is increased due to an unexpected pandemic, the company is unlikely to succeed. As a core economy in the municipality of Romblon, the marble industry has been impacted by the pandemic; thus, a rapid assessment study was carried out. Responses were received from 22 industry owners, which included the crushing, quarrying, cutting, lathe, and marble shop industries using online and actual interviews. Because of the situation, which caused enterprises to be disrupted suddenly, a non-standard sample approach had to be used. The responses, while highly informative, are not based on a random or representative sample, and financial aspects are only based on estimation. This rapid assessment of the impact of the pandemic showed the extent of the damage caused, ranging from total closure, loss of jobs, and income for both owners and the municipality in general. Depending on the type of business and capital, specific measures are recommended to help the marble industry recover.

*Keywords:* COVID-19 pandemic, impact assessment, marble industry

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# Determination of Appropriate Livelihood Program and Development in a Rural Area

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This study aimed to determine the appropriate livelihood program and development of a community in a rural area. A structured questionnaire was used in the study. This study presented the livelihood condition and livelihood needs through the identified assets that the community have. The results of the study showed that though they have natural asset, there are still limitations when it comes to utilizing those assets for their livelihood. They have poor water supply, poor to good housing and poor sanitation. The community has labor capacity but with limited skill due to lack of education and not enough knowledge. The working population is receiving low wages and still earning below the poverty threshold. A strong family ties is present as shown by extended family relationship. Government assistance is received through senior citizen pensions and conditional cash transfer though the 4Ps program of the government. With the result, the community showed signs of poverty and needs support from the government. Some of the livelihood programs and improvement suggested were formation of association to access help and assistance, financial literacy, technical and vocational trainings and mentoring programs. These suggestions could help in upgrading the livelihood condition of the community.

*Keywords*: livelihood, development, countryside, determination, community

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# Work from Home Satisfaction: Filipino Remote Workers and the COVID-19 Pandemic

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The COVID-19 pandemic has shifted the norm of paperwork to functioning from home setup. Employers and management of big firms, universities, and other organizations are forced to send home their workers and produce work typically wiped out of the workplace. They find ways to operate continuously. Employees have to adjust and adapt to the new normal setting. Work satisfaction is based on how they felt about staying at home and doing the work usually done in the office. The benefits of working at home measure the joy felt by the employees. Work-life balance is still seen as an essential factor in work satisfaction. They have identified what the needed qualities to work remotely are. The outcome from work from home setup gave importance to the use of technology when working. The evaluation of working from home by 166 remote employees in the Philippines was investigated using an online questionnaire. The findings imply that factors affecting work efficiency and the attributes necessary are judged differently based on gender, age, education, and length of employment, as revealed by correlation analysis of the study variables. The findings are reviewed and described in terms of the most satisfied and dissatisfied Filipino remote employees' characteristics.

*Keywords:* COVID-19, quarantine period, remote worker, telecommuting, work from home

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# Work-Family Conflicts and Family-Work Conflicts among Police Professionals: Implications to Law Enforcement Services

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This study examined the work-family conflicts and family-work conflicts among members of the Philippine National Police and its implication to their law enforcement duties. It utilized the phenomenological approach in gathering qualitative data. The lived experiences of PNP members were identified through conducting interviews among selected PNP personnel in Romblon Province. Their responses were then transcribed, coded, and interpreted accordingly to draw themes and meanings. Findings revealed that for police work, tensions between the family and the work force include mandatory or unwanted overtime, working under pressure and perceived exhaustion, job stress and psychological pressures, such as repetition or frequent interruptions. The demands of the job and duty loyalty go against the marital engagement of an official in terms of time and dedication to the family as many officials maintain irregular schedules and also work overtime shifts. In comparison to many others, policemen have a high-risk job. They face a variety of risks at work depending on their assignment. Working in a paramilitary setting may therefore have potentially detrimental effects on police officers' home lives. Implementing permanent working hours, hiring more qualified and competitive police officers, initiating tie ups with the DWSD to conduct seminars and counseling services, giving awards and commendations are recommended.

*Keywords:* family-work conflict, law enforcement, police professionals, work-family conflict

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# Emotional Intelligence as a Correlate of Adversity Quotient: Basis for Development Training Program among Police Officers

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The purpose of the study was to determine the emotional intelligence and adversity quotient of police officers. It sought answers to the following: What is the level of respondents' emotional intelligence and Adversity Quotient? Is there a relationship between emotional intelligence and Adversity Quotient? And what is the development training program that can be proposed for the respondents? The researcher utilized a descriptive-correlation design and used the Bar-On EQi-S (Short Version) for EQ and the Adversity Quotient Profile® 10.0 for AQ. Pearson *r* and weighted arithmetic mean were used in analyzing data. The results showed that the respondents' rating in EI was in low level. In intrapersonal, stress management and general mood, the respondents obtained a very low rating while interpersonal and adaptability were in low level. positive impression got the highest rating of average; however, the total emotional intelligence fell under the score of very low level. The respondents attained a low level in the overall AQ. This research reveals that there is no significant relationship between the intrapersonal, adaptability, positive impression and AQ C.O.R.E dimension. Conversely, it showed that stress management has a significant relationship with ownership. Adaptability has a significant relationship to reach. There is no significant relationship between the total emotional intelligence and overall AQ. A development training program is highly recommended to improve their capacity in managing their emotional well-being. It is recommended that the present study may be reviewed, criticized, and even be replicated using more varied samples, variables and other surveys and measurement techniques.

*Keywords:* adversity quotient, emotional intelligence, intervention program, police officers, resilience

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# Employment, Job satisfaction and Competency Performance of Bachelor of Science in Agricultural Engineering Graduates of the Romblon State University

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This paper focused on the following: (1) Graduates' employment status considering application of knowledge and skills derived from the curriculum in terms of preparatory subjects, fundamental agriculture, basic engineering, and professional agricultural engineering; (2) Graduates' job satisfaction with work condition, salaries and benefits, career growth and job-course relevance; (3) Graduates' competency on management skills like communication, human relations, leadership, and planning; (4) Strengths and weaknesses of Bachelor of Science in Agricultural Engineering program and (5) Differences on perceptions about management skills of the graduates. From 243 participants of the study, two sets of questionnaires were used in gathering data; one for the graduates and another for the employers. Using t-test, employers and graduates equally revealed that graduates' knowledge and skills in preparatory subjects were often applied while those in fundamental agriculture, basic and professional agricultural engineering were seldom applied. Major strengths of the program were on graduates' skills in computer and info technology, investigative aspects of agriculture, project evaluation, and agricultural wastes management, while weaknesses were on fish nutrition, wood-metal works, development of machine elements, communication skills, professional agricultural engineering expertise and graduates' employment in non-agricultural sectors. Graduates were satisfied with work condition, career growth opportunities, salaries and benefits. They performed very satisfactorily competency skills in planning, organizing, leadership, and human relations but not in communication skills. Improvement of performance in licensure examination, job placement services and curriculum revisit are recommended to make graduates more competitive.

*Keywords:* competency performance, curriculum, employability, job satisfaction, tracer study

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# An Investigation on Organizational Culture at a Philippine Private School Using Geertz and Pacanowsky's Cultural Approach to Organizations

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Numerous organizational members resigned in the participant school. Such happening was even jokingly dubbed as the Exodus by its organizational members. Not only that, in the past years, the enrolment figures declined. These school problems can be traced back to the little attention on deciphering and analyzing the school's organizational culture. Utilizing Geertz and Pacanowsky's cultural approach to organizations, this study strives to answer: What are the stories told by organizational members that describe the participant school's organizational culture in terms of dealing with problems encountered at work? Qualitative data were acquired online through in-depth interviews of 12 organizational members. The participants were taken using convenience sampling, bearing in mind the representation of each department. Data were analyzed through Braun and Clarke's thematic analysis. Findings reveal that organizational members had a difficulty transitioning in their first year of work; struggle handling multiple roles and tasks. Meanwhile, gossips and insensitive remarks were prevalent; and many school officers did show behavioral integrity. It is suggested for the school to conduct productivity, psychological safety, and workplace relations trainings; clarify gossips and negative remarks that are not permissible; and develop grievance procedure policy.

*Keywords:* Geertz and Pacanowsky, organizational culture, organizational communication, school culture, work problems

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# Predictors of Students' Performance in Accounting 1

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In Romblon State University, the surge of enrollment but low cohort survival rate in the BS Accountancy program calls for an urgent review of its admission policies. This study analyzed whether gender, school type, academic track, senior high school report card grade, Overall College Admission Test (CAT) Score and its subject components (Science, English, Mathematics and Filipino), and abstract reasoning can significantly predict students' performance in Accounting 1. Correlation between accounting grade in senior high school and final grade in Accounting 1 in college was also determined. Registration data and test results from 79 students with complete information out of 139 target respondents were analyzed using multiple linear regression. Results showed that English CAT Score ($\beta$ = 0.34, p = 0.001), academic track ($\beta$ = 0.32, p = 0.001) and Abstract Reasoning Test Score ($\beta$ = 0.31, p = 0.002) can predict the performance of students in Accounting 1 but there was no significant relationship between accounting grade in senior high school and final grade in Accounting 1 in college ($r$ = 0.21, n = 55, $p$ = 0.12). The significant predictors are reflective of the important intellectual skills and competencies the accounting profession requires such as analytical, problem-solving and strategic critical thinking skills. The University may consider these factors in updating their admission policy to the program.

*Keywords:* ABM strand or track, abstract reasoning, College Admission Test scores, English proficiency, predictors of final grade in Accounting

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# An Enhanced Review Program for BLEPT Preparation: Pathway to COD/COE Accreditation

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The aspiration of Romblon State University-College of Education of becoming a Center of Development (COD) and Center of Excellence (COE) is inspired by its pledge to explore ways and optimize resources to live up to its institution's mantra. This study tested the effectiveness of the college-developed online review facility, Prepare2Excel. Primarily, it purported to provide enhanced learning-tool both for BLEPT reviewees and facilitators; customize review programs based on the current reviewees' needs; extend the reach of the review facilities beyond RSU premises; and achieve 100% rate of BLEPT passers. Reviewees' scores in diagnostic, pre-board and actual BLEPT test results were compared. The intervention was done through a series of sessions and participants took the tests through scheduled time as set by the college. Paired sample t-test was employed to test for significant difference of the three conditions. Interview was also conducted to supplement the quantitative data gathered. Based on the findings, the intervention was found out to be helpful on the participants' performance in BLEPT. With that, it is highly recommended for the BLEPT takers for the succeeding years. Most importantly, since this is technology-based, it is expected that data from each phase of the program can be secured well and organized for future reference, hence an ideal way for an effective data management system.

*Keywords:* BLEPT, COD, COE, Prepare2Excel

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# SOCIAL SCIENCES, HUMANITIES, AND EDUCATION

# Determinants of Science Motivation among Grade 10 Public Secondary School Students in Tablas Island, Division of Romblon

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This research was aimed at finding out the determinants that motivate students to study science under the realm of Self-Determination Theory. The descriptive quantitative method was used. Science Motivation Questionnaire by Glynn and Basic Psychological Needs Satisfaction Scale developed by Ryan and Gagne were the instruments used to determine students' level of science motivation and personal-related factors respectively. Multiple Linear Regression Analysis and Logistic Regression were run to determine which variables significantly and best predict students' science motivation. Results revealed that students have average perception of satisfaction in terms of personal-related factors such as autonomy, competence and relatedness and high level of intrinsic motivation in terms of science motivation. Multiple linear regression analysis showed that teacher's competence, parental support, teacher's classroom management and autonomy have been found to significantly predict science motivation. Intrinsic motivation emerged as best predictor of student's intention to take Science, Technology, Engineering and Mathematics course.

*Keywords*: autonomy, competence, intrinsic motivation, science motivation, self-determination theory, relatedness

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# Learning Styles in Solving Math Problems and Academic Performance

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To address the pressing issue regarding students decreasing performance in mathematics, this study aimed to know the learning styles and academic performance of the students in solving math problems. This study used quantitative method and employed the correlation method of research in collecting and validating the needed data from 75 freshmen students of TED at RSU–SFC. Based from the data gathered, the most frequently preferred learning style of freshmen college students in solving math problems was verbal-linguistic. The freshmen college students perceived their academic performance in solving math problems as very satisfactory to excellent. Findings further show that there is a relationship between learning styles and academic performance of the respondents. The learning styles of male students do not statistically differ from the learning styles of female students. There is a significant difference in learning styles and academic performance of respondents across age brackets.

*Keywords:* academic performance, learning style, mathematics, math problem solving

*Melchor R. Root*
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# Predictors of Problem-Solving Skills in Algebraic Worded Problems among Elementary Education Students of Romblon State University - Tablas Campuses

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The purpose of this survey, which was done among 112 BEED students at Romblon State University's Tablas Campuses, was to find answers to the following questions: 1) Is there a link between gender and age when it comes to problem-solving skills? 2) Is there a link between problem solving skills and Mathematical Learning Styles in terms of visual, auditory, and kinesthetic perception? 3) Is there a link between mathematics communication abilities and problem-solving abilities? In gathering data using a questionnaire: learning styles preference inventory adapted from Arem (2009) and five questions on algebraic worded problems (Arreola, 1998). The results show no significant relationship between gender and proficiency level in problem-solving skills in Algebraic worded problems. In other words, the proficiency level towards problem-solving skills among males and females (t = -1.49) are equal. Moreover, the researcher found no differences in performance. ANOVA confirmed that the main effects of age between proficiency level (.536) were not significant. There is no evidence; however, that age affects the proficiency level of respondents. Furthermore, the researcher found a high relationship (significance level .01) between mathematical communication skills (r = 0.881) and proficiency. While sex (0.141), age (0.057), visual (0.074), auditory (0.076), kinesthetic (0.087) learning styles attained negligible correlation. The results show that mathematical communication skills affect the problem-solving skills of the respondents, while the factors that took an indirect effect on the students' problem-solving skills were sex, age, and learning styles: visual, auditory, and kinesthetic.

*Keywords:* auditory, kinesthetic learning style, mathematical communication, problem-solving, visual

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# Development and Validation of a Research-Based Instructional Material in Geometry

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The study focused on the development of a supplementary learning material in Geometry and assessment of its validity in terms of adequacy, clarity, contents, objectives, suitability and usefulness. It was subjected to the scrutiny of competent DepEd Mathematics teachers and professors in Mathematics at two universities, Romblon State University and De La Salle University. The study concludes that the developed SLM entitled "Paper Folding in Geometry" is valid in terms of adequacy, clarity, content, objectives, suitability, and usefulness. The development of the SLM is not in its final stage as it has to be pilot tested with grade six elementary students as participants.

*Keywords:* supplementary learning material, paper folding, validity

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# Evaluation of Modular Instruction and Academic Performance in Algebra

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This study aims to evaluate the modular instruction and determine the academic performance in Algebra of Grade 8 students. The study was a descriptive – correlational in design. The researchers used the quota sampling method to determine the 100 samples out of 610 students to evaluate the modular instruction and their math teachers in four public high schools in San Fernando District. The findings of the study showed that Grade 8 students had a very good evaluation of modular instruction in Algebra. Most of them agreed and strongly agreed on statement constituting how the modules were implemented in their subject. Likewise, Mathematics teachers had also a very good evaluation of modular instruction in Algebra. Most of them agreed and strongly agreed on statements about how modular instruction in mathematics is done in their respective schools. However, students' grade in algebra is low. There is a significant difference between the academic performance of male and female students in algebra, in favor of the females.

*Keywords*: academic performance, performance in algebra, modular instruction

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# Kindergarten Math Module Content Appropriateness Assessment: Input Towards Developing a Quality Remote Learning in the New Normal

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The shift to an alternative mode of teaching and learning, such as modular instruction brought about by the pandemic, has become the new norm in education. However, the production of learning modules generated doubt as some of these learning materials were reported to have flaws. Therefore, this study was carried out to assess the content appropriateness of the developed kindergarten module within the 1st to 3rd quarter of school year 2020-2021 in the District of Romblon to provide input to quality modular instruction. A total of 32 kindergarten teachers were purposively selected and 170 randomly selected parents participated in a sequential explanatory mixed method study. The quantitative data were analyzed using descriptive and nonparametric statistical tools such as percentage, median, Mann Whitney U test, and Kruskal Wallis H test. Results showed that the kindergarten module developed by teachers had been found to be appropriate to very appropriate based on parents' and teachers' feedback. Teachers and parents' rating of the appropriateness of the module across the various contents is similar though teachers tend to view the content of the module to be slightly more appropriate than that of parents. There are also no variations in the rating across the demographic groupings of parents, in all the parameters. The result of the qualitative arm showed the need to focus on enhancing some contents, as certain areas have been challenging to master. It is recommended that consideration be given to enriching some contents of the module to increase its relevance, especially in areas that are difficult to master. For future research endeavors, it is suggested that other stakeholders are encouraged to participate in the module assessment. Other criteria not part of the investigation may also be included to yield vital information to enhance the module effectiveness.

*Keywords:* content appropriateness, kindergarten, module assessment

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# Evaluation of JC Snakes and Ladders Game among First Year College Students in Romblon State University – Cajidiocan Campus

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People of all ages love to play games that are enjoyable and motivating. Games give students opportunities to explore different fundamental number concepts, like counting of sequence, one–to–one correspondence, and strategies in computation. The teacher should give students multiple chances to play and enjoy a game. Then, provide the students' mathematical concepts that emerge as new patterns, links, and tactics. Thus the researchers created JC Snakes and Ladders, a game that summarizes the skills addressed in the Mathematics topic, to improve students' mathematical ability despite the detrimental effects of the COVID-19 pandemic. The study used a cross-sectional survey design. Part one of the survey inquired about the respondent's age, gender, course, and mathematical achievement. Part two consists of 27 questions adapted from Savi, Wangenheim, Ulbricht, and Vanzin's (2010). The respondents of the study were all first-year education Students in three programs, BEEd, BSED, and BTLEd of the education department of Romblon State University – Cajidiocan Campus. The respondents were requested to answer the evaluation questionnaire using a five-point Likert scale, to allow respondents to express how much they agree or disagree with particular statements. Results show that there is no significant difference between the respondents' assessments in terms of their demographic profile when it comes to sex, age, course, and mathematics performance. It also emphasizes that the JC Snakes and Ladders game is effective when it comes to attention, relevance, satisfaction, immersion, challenge, social interaction, fun, and knowledge of the students in learning Mathematics in the Modern World subject.

*Keywords:* JC snakes and ladders game, mathematics in the modern world

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# Interest in Reading and Academic Performance in Purposive Communication: Basis for Communicative Skills Enhancement

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This study was conducted to determine the interest in reading and academic performance in purposive communication: basis for communicative skills enhancement. The researchers used descriptive correlation method in collecting and validating the needed data. A self- formulated questionnaire was prepared to generate the data to be gathered on the conduct of survey. The result of the study showed that as to the type of reading materials used, most of the respondents were using printed materials. In terms of reading time preferences, the result showed that respondents like to read either during morning (6:00-11:59 am) or evening (6:00- 8:59 pm). For the number of hours spent in reading and purpose of reading, the findings showed that the respondents read the subject purposive communication for approximately 2 hours and 30 minutes every day for the purpose of enhancing their academics. As to the students' academic performance in terms of their final grades, the result showed that most of the respondents got a final grade of 1.75, equivalent to 90-92%. Interest in reading has a significant relationship to academic performance.

*Keywords:* academic performance, communicative skills enhancement, final grade, interest in reading, purposive communication

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# Selected Shakespearean Tragic Play: Error of Judgement of the Characters and Its Implication to Teaching Literature

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This study focused on the error of judgment of the characters in selected Shakespeare's major plays: Hamlet, Romeo and Juliet, King Lear, Othello, Antony and Cleopatra. It analyzed the tragic flaw found in the events, theme, setting, and characterization. The error of judgment of the characters as the cause of their downfall are identified by the use of the literary device Hamartia as outlined by Aristotle in his Poetics. This also presented its implications in teaching literature. This is a qualitative descriptive-analytical anchored by textual analysis. It utilized analytical description in the concept of errors found in Shakespeare's tragic plays. The plays of Shakespeare are indisputably the greatest tragedian in the field of writing because of his overreaching protagonists which also are tragic heroes. It stipulates some flaws which led to their destruction. It was determined that the protagonists in the plays show some flaws in the events, how the plays change from happiness to misery because of errors; setting, the time and place in which the action of the tragedy occurred; theme, which represents the kind of tragedy and lastly the characterization, by pointing out the qualities and their deeds.

*Keywords:* Shakespearean play, tragedy, flaws, literature, error

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# Hamong Hinaharap ng mga Estudyante sa Modyular na Paraan ng Pagkatuto at ang Akademikong Performans ng BSED sa Departmento ng Edukasyong Pampagtuturo: Batayan ng mga Guro sa Pagpapaunlad ng Modyul

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Isinagawa ang pag-aaral na ito upang matukoy ang mga hamong hinaharap sa modyular na paraan ng pagkatuto at ang akademikong performans ng mga estudyante ng BSED ng RSU - SFC. Ito ay binubuo 103 na mga tagatugon. Ginamit sa pananaliksik ang palarawang pamamaraan at talatanungang sarbey. Sa pangkalahatang datos kaugnay ng mga hamon sa paraang ito ng pag-aaral, nalaman na karamihan ay sumang-ayon sa mga hamong inilahad ng mga mananaliksik. Pinangunahan ito ng hamon sa pag-imprinta ng mga modyul at awtput. Ipinapakita na hindi madali ang modyular na paraan ng pagkatuto. Nalaman na walang pagkakaiba ang akademikong performans ng estudyante batay sa kanilang personal na katangian. Wala ring makabuluhang ugnayan sa akademikong performans ang mga hamong hinaharap sa modyular na paraan ng pagkatuto. Kung kaya, nakasalalay pa rin sa kakayahan, kasanayan at pagpapahalaga ng mga estudyante ang pagkatuto at antas ng akademikong performans sa kabila ng mga hamong hinaharap sa modyular na paraan ng pagkatuto.

*Keywords:* akademikong performans, estudyante, modyular na paraan ng pagkatuto

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# Kag Yawa: A Socio-Pragmatic Analysis of Asi Speakers' Language Profanity in Odiongan

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In a conventional definition, taboos are defined by Merriam-Webster dictionary as a prohibition imposed by social custom. In relation, profanity is one of the taboos considered in a society and is composed of "bad" words, cursing, vulgar terms, cussing and any that relate to such. Although a previous study has addressed the reasons for the use of profanity and tackled the gender-based use of profanity, none had examined the use of profanity, particularly the term "Yawa," in Romblon province specifically in the town of Odiongan. Hence, this qualitative study answers the questions: (1) How often is "yawa" used in an Asi conversation and (2) What are the functions of "yawa" in Asi conversation? Using the discourse and thematic analysis as its research method, guided with the framework of Paul Grice's Conversational Implicature as a lens to analyze the data, this study focused on the socio-pragmatic functions of the term "yawa" spoken by the Asi speakers. This paper included nineteen (19) participants and asked their consent to conduct clandestine recording of their conversations in social gathering. Findings revealed that "yawa" was used as a gap filler, referential and emotive functions, a form of exaggeration, insult, claiming solidarity, and utilized as an introductory and closing expression. The pragmatics of a word has, once again, been proven to be complex as it does not comply only to one meaning. For it to have a meaning, one should consider the whole context of the conversation and its linguistic relevance.

*Keywords*: Asi, pragmatic analysis, profanity, taboos

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# A Stroke of Skillful Naming: Exploring the Art of Nomenclature in the Magical World of Harry Potter and Its Implication to Teaching Language and Literature

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This study examined the features of characters' names in three Harry Potter Books namely Harry Potter and the Sorcerer's Stone, Harry Potter and the Chamber of Secrets and the Harry Potter and the Prisoner of Azkaban. It also interpreted the names and their potential to carry the meaning relevant to the text, sought character naming patterns and identified how these findings will be useful in the teaching of literature language. Literary Onomastics and Formalistic approached to literary criticism were the theories that guided the process of this research. Extensive analysis revealed that most of the character names in the books were meaningful which bring significance to characterization particularly to the behavior and the physical appearance of the characters. It was also determined that the dominant patterns used in creating the names are etymologic, that is, the use of words from diverse languages; and Mythological which is referencing the ideas from old myths. The findings of the study show that Harry Potter novels provide opportunities for language learning. Intertextuality is also identified through the rich referencing from mythology, folklore, religion, geography and history that can widen readers' knowledge in different subject areas. The books which marveled the world of fantasy fiction transcending through the age and culture, is currently an unused resource to inspire learning in the classroom. Furthermore, the elaborate details done by the author in every aspect of her work brings the readers to a superior world of magic.

*Keywords:* code, icon, intertextuality, morphology, symbol

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# Selfie-Mentality: A Factor that Leads to Narcissism

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This study uses qualitative and expository method to show the connection between selfie-mentality and narcissism in the light of Gabriel Marcel's Philosophy. It discusses the significance of I and the other and will be defined according to Gabriel Marcel's concept in the contemporary world. This study relates selfie-mentality to narcissism as an act which hinders man to know his true self-identity. He is a person who uses mask to project an image to be accepted by many but cannot be seen in his real existence. This study too discusses the different effects of selfie-mentality in one's selfhood. It tries to answer the main problem with regards to the phenomenon on how selfie-mentality affects the person in becoming narcissistic. A person who is narcissistic is a self-centered person who do things for a selfish intention. They look at the other as an object to be used and manipulated. They possess an attitude which denies their very nature as man who is social and rational being. According to Marcel, man who is alone, lives in absurdity and despair. It is very important for man to have participation, communication and communion with one another to realize their true self-identity.

*Keywords:* narcissism, obsession, self-centered, self-identity, selfie-mentality

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# Immanuel Kant's Ethics of Autonomy as Means for the Realization of Man's Subjectivity

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This study seeks to express and answer the problem on how does subjectivity be realized by an individual person through the aid of Immanuel Kant's Ethics of Autonomy using the expository study of Immanuel Kant's moral philosophy. The researcher's focuses on the discussion about autonomy and principles of morality, subjectivity and personhood. This research uses the views and perspectives of Kant and some authors that somehow, made an interpretation regarding on the said topic based on the work of Immanuel Kant. The subjectivity of man in the light of personhood is a conscious act of a person in order to realize the value of humanity as an object in relation to other subject individuals treated as an end. Throughout the study on this topic, the researcher implies that human personhood is a task vested on the duty of the subject that has to be realized and determined. All individual must strive to improve his/her rationality by acting morally that is necessary for man's maturity and realize the value of being ethical. The subject individual is the central character in which the personhood is perpetuated consciously in order for the human person to reach self-determination, self-realization and self-sufficiency.

*Keywords: autonomy, morality, good will, categorical imperative, personhood and respect*

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# Victim's Analysis of Domestic Violence in the Province of Romblon: Insights to Policy Makers

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This study explored the predisposing factors on a woman to become a victim of domestic violence in the Province of Romblon. The violence experienced was correlated with the victim's socio-demographic profile, personality types, the intrapersonal (emotion regulation and self-esteem), and the interpersonal factors (aggressiveness, relationship satisfaction, and conflict management style) to determine whether or not they contribute to becoming a victim of domestic violence. The result revealed that the victims mainly experienced psychological abuses followed by physical abuse, and the least was economic abuse. They mostly belong to 29-38 years old, Roman Catholic, urban dwellers, unemployed, non-Indigenous people, high school level, married for less than ten years, with low income, having children of 0-3, and with overcontrolled personality. Physical violence was statistically related to the victim's ethnicity, overcontrolled personality, low self-esteem, angriness, and low dyadic satisfaction on values. Psychological violence revealed to have a statistical correlation with the victim's residence, having under-controlled personality, employs cognitive reappraisal as emotion regulation, angriness, and Dyadic satisfaction on activities and discussion. In addition, sexual violence was established to have a relationship with the victim's age, religion, cognitive reappraisal and expressive suppression as emotional regulation, being physically aggressive, dyadic satisfaction on affection and decision, and employs conflict engagement or compliance as a conflict management method.

*Keywords:* victims, domestic violence, personality types, predisposing factors

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# EXTENSION

# Process, Design and Value Enhancement Demonstration on the Tiger Grass Broom Production in Romblon

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The training activity aims to upgrade the process or operation of the tiger grass broom production by utilizing a safe and easy-to-operate machine and giving no adverse effect on the tiger grass panicles. The quality of the raw materials dictates the market value of the main product. Further, training aims to demonstrate a new technique for an easier and faster approach and unique design, creating a more competitive tiger grass broom product in the market. The training activity is in partnership with the Romblon State University (RSU) and Department of Science and Technology – Provincial Science and Technology Center (DOST-PSTC) Romblon. It utilizes an educational institution approach and the project approach. The proponents identified beneficiaries, the Indigenous Peoples (IPs) in Calatrava, trained on the new technique and design, and experienced utilizing the battery-operated pollen remover unit in preparation for broom production. A total of 35 participants attended the demonstration and training, wherein they supplied the raw materials for broom making. At the same time, the RSU and DOST provided other materials and equipment to complete the broom-making process. Training evaluation revealed that male participants rated the machine with an overall mean of 3.4 (very good) and the training demonstration on the new design and technique rate at 3.2 (very good). On the other hand, female attendees rated the machine 4.2 (excellent) and 3.8 (excellent) for the training demonstration. The success of the training activity can be adapted to other broom-making production groups or cooperatives in the Province of Romblon.

*Keywords:* disruptive tiger grass broom, process enhancement of tiger grass broom, tiger grass broom Romblon, tiger grass pollen remover, training evaluation

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# Computer Literacy Training on Computer Operations and Microsoft Application: Its Effectiveness Throughout the Five-Year Conduct for Elementary Pupils of Minas and Alcate Elementary School

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Today, education is not highly achieved if the required inputs such as computer literacy, effective teaching and others are not provided. Students should be equipped with the 21st century skills particularly in the information, communication, media, and technology skills. They should acquire the competencies which are generated by the modern world using computer technology as medium. In the rural areas, computer literacy is poor for they lack with the resources and technology-skilled personnel. With this, the Information Technology Society extended its program to reach-out the students of Minas and Alcate Elementary School through a Basic Computer Literacy Program. The purpose of this study was to assess the Impact of Computer Literacy Training on Computer Operations and Microsoft Application for Grade IV, Grade V and Grade VI pupils of Minas and Alcate Elementary School from School Year 2015-2020. This employed a descriptive method of research. In data gathering, triangulation method was used. The findings of this study showed that pupils are very eager to learn. The training achieved its purpose of giving literacy to the pupils and gained positive outcomes in learning basic computer literacy. Based on the findings, it was recommended that teachers should develop innovative and creative computer assisted instruction to instill the acquired knowledge and skills of the pupils from the training and the LGU and the Department of Education / Department of Information, Communication and Technology should provide for the schools and teachers with computers and ICT centers.

*Keywords:* Alcate Elementary School, computer, IT Society, literacy, Microsoft, Minas Elementary School

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