ISSN 2815-083X (Print) | 2815-0848 (Online)

EXCELLENCE REDi

# VIRTUAL AGENCY IN-HOUSE REVIEW 2020

# BOOK OF ABSTRACTS

Pursuing Excellence in Research, Extension. Development and Innovation in the New Normal

October 26-30, 2020

ROMBLON STATE UNIVERSITY · 1915 · PHILIPPINES ·

REDi

RESEARCH • EXTENSION • DEVELOPMENT • INNOVATION

**Virtual Agency In-House Review 2020**
Abstracts of the Virtual Agency In-House Review 2020 organized by
Research, Extension, Development, and Innovation Office
Romblon State University
Odiongan, Romblon, 5505

Virtual Research and Extension Congress | 26-30 October 2020


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# MESSAGE OF THE PRESIDENT

My role as academic steward is to bring the University together in excellence. If we nurture an individual and make that as our investment, people would be able to buy a true genuine gold called excellence. But how do we define excellence? Is it maintaining what has been done before or meeting a standard set by others? Achieving excellence is having a clear vision. Our mind has the capacity to envision excellence that steers our body and mind toward our goals. If achieving excellence is about nurturing the individual and also having a vision and a goal then, both must be present and must be rigorously pursued. This can only be achieved when one is motivated. So, check yourselves what motivated you to participate in this In-House Review.

The REDi unit has set up bridges to allow you to cross the gap between being a neophyte to becoming a professional researcher. So, make the most of this opportunity. May I remind everyone that our own pursuit of excellence will bring us to the next level of excellence. This is the time to unleash and nurture your potentials. Nurturing the individual members of the organization to pursue what has never been tried and allow them to walk the least traveled road fearlessly and rebel to the conventional standards would make them recreate new possibilities and lead to new discoveries. This is opening the gate of research.

We are all aware today that technologies are emerging and affecting our lives, which signals the 4th Industrial Revolution, a new era that builds and extends the impact of digitization thus, calling us to a worthwhile paradigm shift not to mention the pandemic that brought us to the new normal. The circumstances offer a variety of researchable subjects, please grab the opportunity. If we consider about moving towards success in research, Dr. Ebora recommends the mentor-mentee approach. The approach is capsulized in 6Cs. He said, "We have to agree on common goals and aspirations, appreciation, and understanding'. He encourages us to co-learn with each other by emphasizing the importance of commitment, time, and resources. Assign permanent personnel in every subject. Cooperation is key to accomplish tasks and that collaboration will ease our job. We have to go out to partner with experts from other units, departments, other colleges, or even with other agencies. And finally, co-own the process and outputs or outcomes of the project. Truly, success in research is about partnership and cooperation. Finally, I would say that research is what makes a university distinct to other institutions. It also offers hope that persuades the future. I wish all a fruitful week-long In-House Review. My congratulations to the organizers, the REDi, and the research presenters. Thank you to our panelists and other guests. Goodluck everyone, God bless us all our endeavors. Let's make excellence our signature! Thank you very much.

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

# MESSAGE OF THE VICE PRESIDENT FOR RESEARCH, EXTENSION, DEVELOPMENT, AND INNOVATION

It is my distinct privilege to welcome you to the 2020 Agency In-House Review of the Romblon State University. We have a bountiful harvest of 81 papers of this year's review and I would to commend and welcome the entries and the presenters from the Extension Category, we have 7 papers; Engineering, Development, and Innovation we have 15 papers; Environment, Agriculture, and Natural Sciences, we have 18 papers; Supervision, Administration, Leadership, and Management 19 papers, and Social Science, Humanities, and Education, we have 21 papers. The papers up for presentation are indeed our attestation to the call of the President for excellence in research and extension in her Ten-Point Agenda. Thank you for responding to the call. Despite the pandemic, we were able to come up with 81 papers for review, sums up our theme "Excellence in Research and Extension in the New Normal". The new normal may have deterred us in conducting our research, as face-to-face interaction with our subjects is no longer allowed or maybe restricted in most cases. Subjects, research studies, and study procedures involving in-person interactions, laboratory collaborative work may have made us cautious, yet we were able to triumph over these limitations and even empowered us to joyfully share to the public the new knowledge we have generated. These limitations and how we cope up maybe the subject for research in the next In-House Review. I thank everyone's contribution in making this event a success. Again, welcome to the 2020 Agency In-House Review of the Romblon State University. Thank you!

**BILSHAN F. SERVAÑEZ, Ph.D.**
Vice President
Research, Extension, Development, and Innovation Office
Romblon State University

# ENVIRONMENT, AGRICULTURE, AND NATURAL SCIENCES

# Bioprospecting Rice Bacterial Endophytes: Different Phylogenetic Groups in the Microniches of *Oryza* species, A Bioinformatics Meta-analysis

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## ABSTRACT

Rice is inhabited by diverse groups of bacterial endophytes, many of which are still functionally unknown. Before we could gain insight into the roles and functions of these bacterial endophytes, it is first necessary to know what bacterial endophytes exist in rice. This meta-analysis aims to summarize and draw essential information on the community structure and diversity of bacterial endophytes in the rice endosphere, particularly in its microniches, including the roots, shoots and the seeds. A meta-analysis of 16S rDNA sequences of endophytic bacteria gathered from peer-reviewed journals and submitted in the NCBI databank was done in this study. A total of 1,047 screened 16S rDNA sequences were collated with complete taxonomic classification. The dominant endophytic bacterial groups in the phylum level mainly include Proteobacteria (61%) followed by Actinobacteria (20%) and Firmicutes (14%). Class level identification mostly shows that Gammaproteobacteria (32%), Actinobacteria (19%) and Alphaproteobacteria (19%) are the dominant groups. The most prominent trend observed is the occurrence of the same bacterial genera detected throughout the rice. Bacterial genera such as *Pantoea, Bacillus, Methylobacterium, Pseudomonas, Enterobacter, Sphingomonas* and others are found throughout the rice endosphere. There are also bacterial genera that are more specifically detected in the major microniches of rice including *Bradyrhizobium, Azospirillum, and Aeromonas* (roots), *Azorhizobium* (leaves), and *Kosakonia* (seeds). This study shows that there are comparatively diverse bacterial endophytic communities in the rice present in all the major microniches of rice indicating potentially high association and functional importance of these bacterial endophytic groups.

**KEYWORDS:** bacterial endophytes, bioinoculant, culturable and unculturable, *Oryza sativa* L. (Rice), rice microniches

# Antibacterial Activity of Seaweeds *(Rhodophyta)* Extract against Zoonotic Pathogen *Salmonella arizonae*

Marilyn Madrilejos Galan and Dennis Kaw Gomez
Santa Maria Campus, Romblon State University

## ABSTRACT

Natural therapeutical compounds have been isolated from seaweeds, paving the way for antimicrobial research using its extracts. This study was conducted to evaluate the antibacterial activity of *Kappaphycus striatum, Eucheuma denticulatum, Gracilaria edulis* and ten common antibiotics against *Salmonella arizonae*, In vitro and In vivo. In vitro antimicrobial activity was determined using standard disc diffusion assay. Seaweeds with highest zone of inhibition were used for bioassay and further In vivo antibacterial experiments. In vivo experiments were conducted using piscine infection model. Results showed that K. striatum has the highest zone of inhibition of 30.86 mm ± 0.44 followed by *G. edulis* (29.64 mm ± 1.14) and *E. denticulatum* (27.56 mm ± 0.36). Interestingly, In vitro activities of three seaweed species has comparable zone of inhibition with tested commercial antibiotics. Bioassay test revealed that *K. striatum* did not exhibit toxicity, even at 500 ppm concentration. Moreover, treatment of K. striatum to *S. arizonae* challenged goldfish has decreased the mortality as compared to untreated samples. Control group has 100% mortality and treated group has only 40% mortality. Therefore, *K. striatum* both In vitro and In vivo have antibacterial activity against zoonotic bacterial pathogen, *S. arizonae*. This study will be a great help in public health, agriculturists and aquaculturists should *S. arizonae* would occur.

**KEYWORDS:** Antibacterial, *in vitro*, *in vivo*, *Salmonella arizonae*, seaweeds

# Antibacterial Potential of *Holothuria leucospilota*, Brandt 1835 Extracts from Carmen Bay, Romblon, Philippines

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## ABSTRACT

In this study, antibacterial activity of extracts from the skin, Polian vesicle, Cuveirian tubules and intestines of sea cucumber *Holothuria leucospilota* was evaluated against *Staphylococcus aureus* (Gram positive bacteria) and *Escherichia coli* (Gram negative bacteria. The antibacterial activity of sea cucumber *Holothuria leucospilota* extracts was evaluated by disc diffusion method. All treatments show inhibitory effects in both test microorganisms, but Cuvierian tubules has no effect on *S. aureus*. Among the six treatments tested in S. aureus, skin has the highest zone of inhibition with an average of 23.25mm followed by intestine 14.75mm, positive control 10.25mm and Polian vesicle 9.00mm, respectively. Majority of the treatments were classified as bacteriostatic towards the test microorganisms. Based on the findings of this study, Gram positive bacteria, S. aureus was more susceptible than Gram negative bacteria, *E. coli*. Therefore, it was concluded that sea cucumber extracts especially *H. leucospilota* collected in Carmen Bay, Romblon, Philippines, exhibited antibacterial potential towards test bacteria. It might indeed be used in the pharmaceutical industry. The results of this study suggest that *H. leucospilota* is a potential source for discovering new antibiotics. It also suggests further investigations need to be carried out to determine its potential application in other aspects of medicine. In addition, elucidation of the compounds responsible for the bioactive including identification, sufficient isolation, and purifications and also the analysis of the antibacterial mode of action should be done for natural drug development in the future.

**KEYWORDS:** Antibacterial activity, Sea cucumber, *Holothuria leucospilota, S. aureus, E. coli*, aqueous extract

# Carbon Sequestration Estimates of Different Ecosystems in CALSANAG Watershed Forest Reserve (WFR): A Preliminary Approach for Sustainable Utilization of Natural Resources

Amelyn A. Formilleza[1], Mae Stella A. Fornal[1], Almaiza Marie F. Rodeo[2] and Borromeo B. Motin[3]
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## ABSTRACT

CALSANAG Watershed Forest Reserve plays a substantial part as a carbon storage through various vegetation. The terrestrial ecosystem can absorb carbon dioxide from the atmosphere and use it for their growth through photosynthesis and other physiological processes. Also, in mitigating the effects of climate change entails the assessment of carbon stocks in various pools. This paper aims to estimate the carbon sequestration capacity of different ecosystems and the economic value in CALSANAG WFR. The estimation of carbon sequestration was carried-out across various ecosystems such as forest, agroforest, annuals, perennials, and grassland. The nested sampling approach was used in assessing ecosystem types where sampling plot size is at least one hectare and randomized if there were marked discontinuities in the vegetation. The carbon sequestration rate was calculated based on the computed mean carbon sequestration rates. Results showed that the forest ecosystem yielded the highest carbon sequestration at 7,383 tons/ha while the total annual carbon sequestered per hectare from grassland is 3,669 tons, perennials is 3,307, agroforest is 839, and annuals is 122 tons, respectively. Overall, CWFR sequestered carbon at 15,320 tons CO2/ha, and as per translation of the total estimated natural capital value at Php 3B or US$ 60M. Without a sustainable watershed management approach to protect CWFR from environmental and anthropogenic threats, society would lose these benefits. To enhance the sustainable carbon storage in the CWFR, enrichment planting particularly in open patches with native, fast-growing and timber species with high yielding varieties may contribute significant carbon storage and greenhouse benefits.

**KEYWORDS:** carbon content, carbon sequestration, carbon sequestration capacity, ecosystems

# Diversity of Riparian Tree Species on the Major River System of CALSANAG Watershed Forest Reserve for Sustainable Watershed

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## ABSTRACT

The study described the riparian tree species of the major rivers of CALSANAG Watershed Forest Reserved namely Parpaguha, Banaden and Humagikhik River as indicator of healthy and functional watershed. Transect lines and quadrants were established along the length of the riverbanks in the different sample points (upstream, midstream, and downstream). Result showed that the riparian vegetation recorded 32 families composed of 322 species with 0.0443 dominance calculated using Shannon-Weiner diversity index (H') resulted very low. However, three are under other threatened including *Canaruim luzonicum* (Piling-liitan), *Canaruim luzonicum* (Sahing) and *Carallia brachiate* (Bakaun-gubat). Twelve are under natives including *Premma odorota* (Alagaw), *Trema orientalis* (Anabiong), *Dipterocarpus grandiforus* (Apitong), *Buchanania arborescens* (Balinghasai), *Calophyllum blancoi* (Bitaog), *Erythrina variegate* (Dapdap), *Alstonia scholaris* (Dita), *Syzygium polycephaloides* (Malig-ang), *Polyscias nodosa* (Malapapaya), *Ficus pseudopalma* (Niyog-niyogan), *Pterocarpus indicus* (Narra), and *Ficus nota* (Tibig). Based on the highest tree species, *Dysoxylum gaudichaudianum* (Igyo) and were mostly found in Parpaguha River in San Andres with a total of 10.25% followed by *Pterocarpus indicus* (Narra), and *Gmelina arborea* (Paper Tree) at 6.21% and 5.59% respectively. Many of the tree species scored five below, and were occupied by very sparse number of shrubs, regenerated and young trees. Result of the collected data recommend appropriate species to be planted especially native trees for an effective rehabilitation, thus calling the attention of the affected communities in the awareness of the on-going human activities is necessary for it may continue effect on the lowering of tree diversity status.

**KEYWORDS:** diversity, rehabilitation, riparian, riverbanks, species

# CALSANAG Watershed Forest Reserve Timber Stock Analysis for Sustainable Forest Management

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## ABSTRACT

One important factor affecting ecosystems' integrity and sustainability of the watershed is the composition of vegetation indicated by vegetation importance value. The purpose of this study is to determine the timber stock composition, diversity and carbon stock density. The 2-km transect was used where species diversity assessment was conducted at every 250m station using the nested quadrat technique established in alternating directions. 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. Result showed an estimated mean total of 315 stems/ha representing 98 species found naturally thriving in the area belonging to 47 families. Dipterocarpaceae is the most dominant family. At the species level, numerically the most conspicuous species were *Symplocos polyandra, Parisha maingayi, Terminalia cf. pellucida, Calophyllum blanco*i, and *Shorea polysperma*. Analysis of diversity indices showed relatively high species diversity of native trees. Out of 47 families, about 20% or thirty (30) taxa belonging to 20 families and 27 genera were considered as endemic. About 15% of the total number of species were considered as threatened species under DAO 2007-1 and IUCN Red list. Forest had total biomass density, with an accumulated total biomass of 701 Mg/ha and carbon density at 332.01 MgC/ha. The total estimated carbon stock of CWFR is valued at Php 2.8 B at 3% discount rate. Protection and in-situ and ex-situ conservation of endemic and threatened species is encouraged to attain sustainable forest development and management of the CWFR.

**KEYWORDS:** biomass density, CALSANAG Watershed, carbon stock, importance value, tree diversity

# Taxonomy, Biodiversity, and Community Structure of Spiders (Arachnida: Araneae) in Mt. Guiting - Guiting, Sibuyan Island, the "Galapagos of Asia", Philippines

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## ABSTRACT

The spider fauna of Mount Guiting-Guiting surveyed in five months from November 2015 to March 2016 from its three environs, namely: Tampayan (site 1:50-100 masl), Layag (site 2: 300-400 masl), and Lumbang West (site 3:500-600 masl) were identified and classified. A key to the families and genera of most dominant family, Araneidae is provided. Pooled data showed a total of 434 spider individuals belonging to 112 species, 40 genera under 17 families represented the spider fauna of the three sites. Of this, 18 species [16% of total species] were discovered new to science. These are *Araneus parangmitificus* n. sp., *Cyclosa lumbang* n. sp., *Milonia pilipina* n. sp., *Poltys sibuyan* n. sp. and *Poltys romblon* n. sp. in Araneidae; *Arctosa lumbang* n. sp. in Lycosidae; *Aetana lumbangensis* n. sp. and *Pholcus guitingguiting* n. sp. in Pholcidae; *Psechrus haguimit* n. sp. in Psechridae; *Heteropoda layag* n. sp., *Heteropoda haguimit* n. sp. and *Olios delunai* n. sp. in Sparassidae; *Leucauge guitingguiting* n. sp., *Leucauge bisaya* n. sp., *Leucauge lumbang* n. sp., *Leucauge sibuyan* n. sp. and *Mesida cajidiocan* n. sp. in Tetragnathidae; and *Philoponella kampana* n. sp. in Uloboridae. Four new locality records for Romblon Island are established namely, *Deliochus sp. Parawixia dehaani* (Doleschall 1859), *Oedignatha scrobiculata* (Thorell, 1889) and *Episinus sp.*. The general trend in species diversity (H1) is Lumbang West (H1=3.69) > Tampayan (H1= 3.35) > Layag (H1=3.23). A slightly different trend occurred at the generic and family level—Lumbang West(H1=2.81 and H1 =1.69), respectively. Spider richness based on number of individuals (I), species (S) and families (F) was highest in Tampayan (I=196; S=50; F=9) > LumbangWeste (I=125; S= 61; F-13) > Layag (I=113; S=43; F=10). Spider diversity increased with increasing altitude except in a more disturbed Layag site. The spider potential diet composition across all sites is also diverse. It consisted of 10 insect orders, namely, Diptera, Hemiptera, Coleoptera, Lepidoptera, Hymenoptera, Orthoptera, Odonata, Blattodea, Ephemeroptera and Phasmatodea, and one each of Araneae, Acari, and Crustacea. The most preponderant diets are the Diptera (12 families), Hemiptera (9) and Araneae (9). Guildwise, the orbweavers were the most dominant followed by the foliage runners and sheet web builders. The ground runners and space webs guilds were the least dominant.

**KEYWORDS:** biodiversity, community structure, Mt. Guiting-Guiting, spider, taxonomy

# Payment to Ecosystem Services of Selected River Systems in CALSANAG Watershed Forest Reserve in Tablas Island, Romblon, Philippines

Amelyn A. Formilleza[1], Juniel G. Lucidos[1,2], Mae Stella A. Fornal[1], Almaiza Marie F. Rodeo[2], and Borromeo B. Motin[3]
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## ABSTRACT

Water resources are considered as vital socio-economic and environmental goods at the global scale. Water supply is one of the important ecosystem services derived from the forest utilized by local communities. Likewise, CALSANAG Watershed Forest Reserve (CWFR) acts as buffer in storing and gradually releasing water to the streams and rivers of the three municipalities it covers – Calatrava, San Andres and San Agustin, Romblon. This study aims to determine the socio-demographic, economic and spatial-related characteristics of the ecosystem services (ES) providers in Balogo Sub-watershed and relate them to their willingness to pay (WTP) for the resource and to analyze the present technical, institutional and financial structure and examine the workability of PES in Balogo Sub-watershed. Potential use of river was assessed through measurement of its capacity, water quality, and potability. Surveys were conducted to identify the presence of institutions and organizations regulating the water services, and to determine the WTP of household recipients. Results show acceptable physical and chemical water quality parameters for irrigation, livestock production, and freshwater fish production. However, water is tested unsafe for human intake due to presence of coliforms so there is an urgent need to establish a water treatment facility to meet approved national standards for drinking water. Moreover, technically, the water discharge of the river in Balogo can support domestic consumption even without any water engineering infrastructure. Despite the non-existence of organizations that can collect user charges, it institutionally feasible through the facilitation of the BLGU. Lastly, financially, though users are willing to pay their user dues, the BLGU may have difficulty raising adequate aggregate revenues to cover maintenance costs of the facilities.

**KEYWORDS:** CALSANAG watershed, payment to ecosystem services, protected area, willing to pay

# An Assessment of the Beach and Sediment Profiles of San Andres: Implication to Vulnerability of Coastal Areas Against Sea Level Rise

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## ABSTRACT

The fluidity of the morphologies of beach and sediments in the coastal areas were attributed to different anthropogenic and natural factors. In this study, we report the beach and sediment profiles of each coastal barangay (types, source, and grain size). We show that 54.08% (5.33 kilometers) of the San Andres coastline lies below the mean sea level. Analysis of the beach composition shows an average sediment size of 0.438 mm. The northern areas were composed of carbonate sediments while the southern part are silicilastic sediments. Change in shorelines from 2009 to 2018 showed that 3 out of 6 coastal barangays (Mabini, Matutuna, and Tanagan) currently experience high erosion (<6 meter per year) brought about by the effects of elevation profiles. Other driving factors include anthropogenic effects such as reclamations, and natural factors such as terrigenous and biogenous inputs. Anthropogenic activities greatly affect beach loss compared to combined effects of the different natural events. Due to continued erosion in Mabini, Tanagan, and Matutuna, these areas have become vulnerable to the effects of sea level rise.

**KEYWORDS:** beach morphology, grain size, sediment types, sea level rise, terrigenous and biogenous sediments

# Resource Valuation of Ecosystem Services in CALSANAG Watershed Forest Reserve in Tablas Island, Romblon, Philippines

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## ABSTRACT

The Philippines is one of the countries with the most diverse biological resources and efforts must be taken to preserve and conserve these resources. Yet, the values of these resources are taken for granted due to lack of knowledge on the contribution and significance of ecosystem services and processes to human welfare. In this study, we report the estimated value of ecosystem services in CALSANAG Watershed Forest Reserve (CWFR). Specifically, the study aims to estimate the potential benefit of CWFR using the System of Environment Economic Accounting (SEEA) framework. Through the estimation of Total Economic Value (TEV), ecosystem services namely provisioning, regulatory, and supporting services are assessed and valued using monetary and other indicators. Results show indirect benefits particularly regulating services in climate regulation ($CO_2$ sequestration and storage), water supply, soil protection, and support services in $O_2$ production have highest annual economic values recorded. These important ecosystem services are critical in maintaining good quality of life yet often neglected that resulted to overexploitation of resources. Without additional efforts exerted to better protect CWFR from environmental and anthropogenic threats, the society would lose a projected economic benefit of Php 63,438,934.75 for the next 30 years. The study also promotes co-designed management approach which highlights the active engagement and cooperation of empowered local communities in protecting and managing the protected area. In the process, recommendations are presented to help local government and private institutions make better policies and support.

**KEYWORDS:** biodiversity, CALSANAG watershed, ecosystem services, protected area, resource valuation

# Current Status of the Sea Grapes (*Caulerpa* spp.) Industry in Selected Regions in the Philippines

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## ABSTRACT

Sea grapes, considered as edible seaweeds, are economically important species of the genus Caulerpa widely consumed and harvested in Southeast Asia. This study evaluated through a social survey using a semi-structured questionnaire the community perception and awareness of sea grapes and sea grape farming, its lean and peak seasons, harvest volume and production, prices in market outlets as well as factors affecting the distribution of sea grapes from selected regions in the Philippines. Data from select group of 1,881 fisherfolks and sea grape farmers revealed that majority of the respondents are informed about the presence and farming of sea grapes in their areas. This study also showed that Visayas has the largest harvest of sea grapes per kilo per month with Mactan, Cebu as the highest contributor, while Northern Luzon has the least harvest due to limited areas for sea grape farms. Sea grapes are also perceived to be seasonal and most abundant during the dry season (January-April). Calapan and Puerto Galera in Oriental Mindoro exhibited the highest market price for sea grapes from 2016 to 2019 likely due to the presence of tourism sites and ports. Results also indicated that sea grape distribution is affected by social factors like gender, civil status, education, and income. The study revealed that sea grapes are still recognized as one of the primary seaweed resources that provide food, income, and livelihood in various regions in the Philippines and has the potential to be scaled up for sustainable production and use.

**KEYWORDS:** *Caulerpa,* lato, phycoculture, Philippines, seaweeds

# Identifying the Toxicity Level of Selected Weed Species as Rice Grain Protectant against Red Flour Beetle *(Tribolium castaneum* Herbst) (Coleoptera: Tenebrionidae)

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## ABSTRACT

This research study aimed to determine the effect of short-term storage period of rice grains as affected by *Tribolium castaneum* under laboratory conditions and carried out in completely randomized design with three replications. Thirteen weeds with potentially possess pesticidal metabolites were extracted using rotary evaporator, diluted with ethanol, and concentrated into 1.0mg ml-1 each of weed species. This was sprayed to 20 previously starved adult laboratory-reared unsexed *T. castaneum* in 50g rice grains to determine their toxicity, antifeedant, oviposition, and growth inhibitory activity. Gathered data were further analyzed by analysis of variance (ANOVA) to compare the significant differences among treatments. Results of the study showed that all the tested weed materials caused significant effect in relation to *T. castaneum* mortality, antifeedant, oviposition, and growth inhibitory activity as compared to the untreated rice grains. Percent mortality was highest in the ethanolic extract of *M. pudica* (78.67%) after 96h exposure period and *A. paniculata* significantly gain lowest weight loss of 0.13 percent. At the same time, ethanolic extract of *A. paniculata* and *M. pudica* showed significant lowest mean number of *T. castaneum* F1 progeny. Following a 35 days of exposure period, ethanolic extract of *M. pudica* and *P. betel* shows significant least number of larvae and adults produced. In view of the overall pesticidal properties of the weeds, ethanolic extracts of *M. pudica*, and *A. paniculata*, show an enormous potential of becoming a new source of bio-pesticide for economical and eco-friendly pest control strategy against the red flour beetle.

**KEYWORDS:** antifeedant, growth inhibitory activity, oviposition, toxicity, *Tribolium castaneum*, weed extract

# Analysis of Indigenous Root Crops Yam (*Dioscorea* species) Containing Inulin: A Sugar Substitute

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## ABSTRACT

Indigenous root crops like Dioscorea species are the source of stable carbohydrate for many people among rural communities and potential source of value-added products. Inulin-type fructan is non-digestible carbohydrates with numerous nutritional properties beneficial to human health. The study aimed to determine the inulin content of indigenous root crops (Dioscorea species) found in Tablas island. Fifty-one accessions were randomly collected from different municipalities. Prior to the main study, morphological traits were characterized for the future adaptation. Hierarchical Cluster analysis determines the cluster membership of the different yam accessions using the WARDS method for the similar morphotraits. High Performance Liquid Chromatography (HPLC) machine was used for refractor index detection to know the inulin content of the species sample. The inulin content of collected accessions were subject to Shapiro Test statistics using a 0.05 level of significance. The study showed the variation of morphological traits among the randomly selected accessions which was an indication of species diversity and possible endemism. Based on the analysis, in cluster 1 with mean of 2.30g/L, Ube has the highest amount followed by Burot in cluster 3 with mean of 1.61g/L and Sinawa in cluster 2 with mean of 0.68g/L. While in cluster 4 had the lowest mean of 0.54g/L with fairly similar results among the samples. The high inulin content species analyzed are possible for mass cultivation as sugar substitutes adaptable in favorable condition as component in the food sufficiency program.

**KEYWORDS:** accessions, cluster analysis, indigenous root crops, morphological traits, non-digestible carbohydrates

# Phytochemical Effectivity of Andrographolide Powder as Rice Grain Protectant against Red Flour Beetle *(Tribolium castaneum* Herbst*)* (Coleoptera: Tenebrionidae)

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## ABSTRACT

This study aimed to determine the effectivity of andrographolide, an active ingredient (ai) proven derived from *Andrographis paniculata* weed which were tested against red flour beetle under laboratory conditions. Two-kilogram fresh leaves of *A. paniculata* were washed, shade-dried, powdered using an electric blender, and sieved with mesh net to obtain fine course dust. Three pesticidal concentrations (2g/2kg, 4g/2kg, and 6g/2kg) of *A. paniculata* powder per 2kg rice were used. These were placed inside a teabag measuring 5.5 cm x 7 cm. One teabag contained 2g powder, two teabags contained 4g powder and three teabags contain 6g powder. These teabags per treatment were placed inside a plastic container with 2-kilogram rice and were infested with 50 starved unsexed adult red flour beetles to determine their toxicity and antifeedant effect. Gathered data were further analyzed by analysis of variance (ANOVA) to compare the significant differences among treatments. Results of the study showed that among treatments, three teabags containing 6 grams *A. paniculata* powders placed on 2 kg rice package exhibited the highest percent mortality (50%) and lowest percent weight loss (1.87%). An analysis of the mean values are given along with the suggested potential utilization of *A. paniculata* powder for the efficient management of *T. castaneum* infestation and reduce the weight loss of rice during storage.

**KEYWORDS:** andrographolide, antifeedant, teabags, *Tribolium castaneum*, weed powder

# Aquashade Technology and Its Impact on the Water Quality and Reproductive Indices of Nile Tilapia *(Oreochromis niloticus* L.*)*

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## ABSTRACT

One of the major challenges facing the tilapia farming industry is the production of sufficient amount of quality seeds during warm seasons. The effect of extreme and unusual increase in water temperature on the reproductive biology of fish must be studied while technologies that might address this problem must also be evaluated. Hence, this study assessed the effect of aquashade technology on the water temperature and reproductive indices of Nile tilapia by investigating the effectiveness of different shading capacities of nets (T2- 40%S, T3- 60%S and T4- 80%S) as top cover of breeding ponds. Gonadosomatic index, sperm density, proportion of active sperm and sperm motility were used to evaluate the reproductive indices of the breeders. The breeding performance was assessed through the spawning rate and seed production. Data on the water temperature and dissolved oxygen were also gathered. Results of the study revealed that shading of pond can help reduce the water temperature by 1-2°C at 0700h and 3-6°C at 1100h to 1500h. The parameters tested for the evaluation of the reproductive indices and breeding performance showed no significant difference among the shaded treatments (T2, T3, T4), but were significantly higher than the unshaded treatment (T1) ($P<0.01$). Results of the analysis also showed that the use of aquashade decreased the water temperature that favored faster gonadal development, increased sperm density, higher proportion of active sperm and higher sperm motility score. It is therefore concluded that aquashade technology is effective in improving the breeding performance of Nile tilapia during warm months.

**KEYWORDS:** gonadosomatic index, seed production, shading, sperm quality, water temperature

# Histomorphological Changes and Digestive Enzymes Activities during the Larval Stage of Snakehead (*Channa striata*)

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## ABSTRACT

Histomorphological changes of the digestive tract was studied in snakehead *Channa striata* from day 1 to day 28. The snakehead larvae measured 3.13±0.02 mm to 43.03±2.08 mm over 28 day of post-hatching (DPH). There was no evidence of gastrointestinal tract development in 1 DPH, only foci of well-developed muscle bundles. The changes in the gastrointestinal tract during early development of the snakehead were observed from 2nd DPH onwards. The stomach was visible in 2nd DPH while intestines and spleen were also visible in 3 and 4 DPH. The same observations were found in the gastrointestinal tract of snakehead larvae in the 5th, 6th, 7th, 10th, and 14th DPH. At 21 DPH, the stomach becomes clear with identifiable cardiac, fundic, and pyloric regions and the liver becomes a prominent organ in the cut section. The gastric gland was observed in the stomach and spleen. The pancreas was fully developed at 28 DPH. These histological changes of the digestive tract indicate dietary shifts throughout the larval development of C. striata.

**KEYWORDS:** digestive enzymes activity; histomorphological changes; snakehead larva; total protein concentration

# Gonadal Development of the Bigeye Scad, *Selar crumenophthalmus* (Bloch 1973) during Different Lunar Phases

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## ABSTRACT

Gonadal development of bigeye scad, *Selar crumenophthalmus* (Bloch 1973) were studied in the waters of Sulu Sea off San Jose, Antique during one lunar cycle from April to May 2018. This is to determine the timing of reproduction of this species. A total of 160 fishes were collected at 40 fishes per lunar phase from the catch of fishing boats using purse seines. Gonadal histology showed that *S. crumenophthalmus* is a multiple spawner. The females and males showed no significant difference ($p>0.05$) in maturity. Lunar periodicity is observed during the last quarter of the moon in the spawning of *S. crumenophthalmus*. The male-female sex ratio was 1:0.48. The gonadosomatic index of females were varied more than males during one lunar cycle. However, the hepatosomatic index of both sexes closely coincided with the mean maturity.

**KEYWORDS:** gonadosomatic index, seed production, shading, sperm quality, water temperature

# Management of Marine Protected Areas (MPAs) in the Municipality of Looc, Romblon

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## ABSTRACT

Overfishing and habitat destruction and other human activities have a direct negative impact on the marine environment. The International Union for Conservation of Nature (IUCN) recognized the importance of the marine protected area in meeting the increasing demand of the world population for food. This study deals with the management of Marine Protected Area in Looc, Romblon by fisherfolks in Barangay Poblacion and Buenavista. The descriptive method of research was applied in understanding the management scheme in resource preservation, conservation, protection, and utilization of marine biodiversity in collaboration with government and non-government agencies. Found in the MPA are coral reefs, mangroves areas, seagrass beds, and Nipa flats. Common species are tuna, spadefish, round scads, shrimps, octopus, and other numerous marine organisms. The result showed that prevention of mangrove cutting, and biodiversity monitoring were strictly observed, and conducted mangrove reforestation, clam seeding, artificial reef installation, and pollution and disease control monitoring. The success of the conservation activities was owed from a higher response of the well-organized and high-level awareness of the Bantay-Dagat Taskforce volunteers who conducted the operation, surveillance, and monitoring of the MPA. Support from the Local Government Unit and other government agencies and partners like DENR, BFAR, academe, and NGOs were essential in providing alternative livelihood projects that inspired them to live by the philosophy of sustainable development and systemic utilization and conservation of resources. The community members who were caught engaging in illegal fishing activities were converted by providing fishing nets in exchange for confiscated prohibited fishing gears.

**KEYWORDS:** Marine Protected Area, Bantay-dagat, sustainable development, conservation of marine resources

# ENGINEERING, DEVELOPMENT, AND INNOVATION

# Design, Fabrication, Performance Test and Evaluation of Arrowroot Starch Processing Machine

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## ABSTRACT

The study addressed an interesting problem and aimed to design, develop, and perform a preliminary evaluation of an arrowroot starch processing machine. The study includes technical performance evaluation, financial and economic feasibility study, and acceptability evaluation in developing the machine. The developed machine has two functions: pulverizing and sieving dried arrowroot lumps into fine starch. Data analysis conducted showed that the type of processing methods used has significant effect in the processing time and recovery weight of arrowroot starch. The traditional processing method is significantly faster than the processing in the developed machine. However, processing the arrowroot starch in the developed machine has significantly higher weight recovery than the traditional method. The moisture content of the arrowroot starch did not have significant effect on the processing time but have significant effect on weight recovery. The developed machine had a processing capacity of 25.9 kg/hr and efficiency of 94.3% whereas traditional arrowroot processing had a capacity of 27.5 kg/ hr and efficiency of 73.6%. The higher efficiency of the developed machine enabled higher weight recovery of the processed starch. The financial feasibility of developing the machine revealed a return on investment of 42.33% and the acceptability evaluation yielded positive responses from potential users. The author recommends prolonged field testing to determine the machine's field capacity, efficiency, and limitations.

**KEYWORDS:** arrow root starch, processing machine, pulverizing, sieving, traditional processing

# Development and Operating Performance of Solar Electronic Vulcanizer

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## ABSTRACT

Solar Electronic Vulcanizer is a vulcanizing device used in repairing punctured vehicle interior tire tubes, powered by a renewable sun's energy converting to electrical energy of 12volts for heating the vulcanizing head during the vulcanization process. This research was made to answer the shortcomings of different vulcanizer especially the conventional vulcanizer or the gas fired vulcanizer, this "Solar Electronic Vulcanizer" had been developed. The evaluation of Solar Electronic Vulcanizer was be done through direct laboratory observations using electrical measuring instrument and thirty (30) evaluators through purposive and convenience samplings. The test was performed three times on each vehicle tire tube and the average time to patch each tube was found to be 7-10 minutes for bicycle inner tubes, 13-15 minutes for motorcycle inner tubes, and 16-20 minutes for automobile inner tubes. In the result, solar electronic vulcanizing device can vulcanize three types of vehicle inner tubes (bicycle, motorcycle, automobile/car inner tube) in varying time because of inner tube thickness. As the heat temperature of the sun stable the charging voltage load increases in a varying time. As to discharging rate, the longer the time in vulcanization process affects battery voltage capacity. The Solar Electronic Vulcanizer was very acceptable to the evaluator in terms of its design, composition, and operating performance.

**KEYWORDS:** Electronic Vulcanizer, Inner tubes, Rubber vulcanizing, Solar

# User Acceptance of IBON (Image-Based Ornithological IdeNtification) Monitoring and Information System in Mobile Platform and GPS Technology

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## ABSTRACT

Biodiversity assessment is vital task in preserving our nature. Monitoring procedures have been a tedious task for people assigned to the labor of the assessment. This study is mainly focused on evaluating the system by means of Technology Acceptance Model (TAM) on the development of the image-based biodiversity and monitoring system in mobile platform to understand the acceptance of the system by the user. The study revealed the level of user acceptance to the system by means of a survey conducted with different users. Overall, the users have the positive acceptance on using technological advancement in the field of biodiversity. This study will be the baseline of all concerned agencies regarding the assessment and monitoring of birds.

**KEYWORDS:** Biodiversity Assessment; Image-based monitoring; Mobile platform; Technology Acceptance Model; user acceptance

# Investigation on the Accelerated Drying Characteristics of *Theobroma cacao* using Microwave Heating

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## ABSTRACT

Drying of cacao beans is very important to the farmers and beans producer especially when it comes to adverse weather condition. The uneven heating in a microwave oven was reduced by a stirrer or fan and glass turntable which still leave spots, such as the center of the oven that receives uneven energy distribution. Composition and geometry set-up should be addressed to absorbed energy evenly. To investigate the accelerated drying characteristics of *Theobroma cacao* using microwave heating in moderating the drying process, COMSOL Multiphysics 5.3 software simulation and experimental approach were used to gather pertinent data. The experimental approach alone may not be optimal to achieve design for uniform heating in the microwave oven, therefore simulation software was highly useful. Based on the results, 600 watts power level settings on the microwave oven for without chamber modification, the average drying rate obtained was 0.09641 g/sec., and for with chamber modification, the average drying rate obtained was 0.05360 g/sec. The 600 watts microwave power level settings modified octagon shape chamber leads to moderate drying time with scattered beans loading set-up in reaching 7.5% final moisture content to a safe level for storage, transportation, and selling standard and, good quality of the finished product. Regression analysis was used to determine the moisture content and drying rate equations with a given time.

**KEYWORDS:** drying rate, microwave heating, *Theobroma cacao*

# Synthesis and Characterization of Biochar, Zeolite, and Nano Zeolite-Silica Composite: A Potential Soil Conditioner for Aquaculture

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## ABSTRACT

This study focused on the synthesis of biochar from rice hull (bottom ash) to pure nanochar (nano silica), intercalation of commercial zeolite, characterization of nano zeolite-silica composite, and to compare the biochar with commercial zeolite and nano zeolite-silica composite at different levels as soil conditioner for aquaculture in terms of Total Nitrogen, Available Phosphorus, Available Potassium, pH, and Organic Matter in one month (duration period). In this study, four treatments replicated thrice using Completely Randomized Design (CRD) were considered: T1 (control), T2 (30 g of biochar with 30 g of commercial zeolite), T3 (30 g of nano zeolite with 300 mg of nano silica), and T4 (60 g of nano zeolite with 600 mg of nano silica) using 1 m length with 3 inches diameter width PVC pipes as experimental unit. The synthesis biochar became completely alkali-free and turned into pure nano silica, while intercalated commercial zeolite became nano zeolite. The characterization showed that nano zeolite-silica composite was amorphous using XRD and had component of silica on the EDS and FTIR, respectively. Thus, nano silica had 24.64 nm while nano zeolite had 8.26±7.24 nm in diameter size using Image J and SEM and can be used as treatment in the study. Results of the study revealed that application of biochar, commercial zeolite, and nano zeolite-silica composite have a potential to condition soil quality in terms of nitrogen, phosphorus, potassium, pH, and OM, respectively. However, it shows insignificant results due possibly to the large concentration applied in the soil.

**KEYWORDS:** aquaculture; nanotechnology; nano zeolite-silica composite; soil quality

# Enhancing the Operation and Acceptability Evaluation of an Electric and Gasoline-Powered Tiger Grass Pollen Remover Machine

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## ABSTRACT

The existing electric and gasoline-powered tiger grass pollen remover was modified to enhance its operation to create a cheaper, lightweight, safe, and efficient working environment while using the machine. The modified tiger grass pollen remover machine uses a 12-volts chargeable lithium-ion battery, a motion sensor to lessen the power consumption operation. With having the machine operation automated and reformed, high initial cost, high levels of engine noise, fuel cost, and operator's fatigue due to machine vibration were minimized. The smart-operated tiger grass pollen remover can produce an output in an average of 1.21 minutes per bundle. The output was the same as that existing unit due to the drum pollen remover diameter, pulley size, length, and diameter of the nylon bristles were replicated from the model electric, and gasoline operated machine. The users' acceptability evaluation revealed that in terms of perceived utility, the tiger grass broom processors rated the machine at an average of 4.2 (very good), 3.8 (very good) for the perceived image, and 3.4 (good) for the perceived ease of use, 2.4 (fair) for the perceived sound, and 4.2 (very good) for the machine cost. The outcome proved that the usefulness of the machine answers the processors' problems encountered on the use of the processing machine. The smart operated tiger grass pollen remover weighs almost 6 kg and costs Php 8,000.00 only.

**KEYWORDS:** acceptability evaluation, battery-powered tiger grass pollen remover, modified tiger grass pollen remover, smart operated tiger grass pollen remover

# Preliminary Investigation on Tiger Grass Pollen as an Alternative Building Insulation Board Material

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## ABSTRACT

Tiger Grass (*Thysanolaena maxima)* pollen is disregarded as a valuable agricultural waste. Thus, this study investigates its potential and beneficial uses as an alternative building insulation material with arrowroot starch as binder. Samples were prepared with the following mix proportions. Mixture A: 250 grams - tiger grass pollen and 100 grams - arrowroot starch which is equivalent to 40% of the tiger grass pollen weight. Mixture B: 250 grams - tiger grass pollen and 125 grams - arrowroot starch which is equivalent to 50% of the tiger grass pollen weight. Mixture C: 250 grams - tiger grass pollen with 150 grams - arrowroot starch which is equivalent to 60% of the tiger grass pollen weight. The samples were air-dried for 10 days. The thickness of the particle boards ranges from 8 mm to 10 mm. Based on the tests conducted for acoustic properties, thickness swelling, water absorption, and thermal conductivity, Mixtures B and C demonstrated acceptable results having met the allowable limit values.

**KEYWORDS:** Tiger Grass pollen, insulation material, particle board, arrowroot starch, building insulation

# Development of Synthetic Graphite/Polyurethane (SG/PU) – Coated Copper Cathodes for Seawater Batteries

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## ABSTRACT

This study was conducted to develop Synthetic Graphite/Polyurethane (SG/PU) – coated copper cathodes for seawater batteries. The study began with the preparation of the SG/PU cathode using three different concentrations: 50%, 53.33% and 56.25% composition by weight of the synthetic graphite (SG). For comparison, the performance of the SG/PU-coated copper cathode-based seawater batteries and uncoated copper cathode-based seawater battery were evaluated using polarization curve measurements to determine the voltage, current, internal resistance, power density, and current density. Results showed that coating the cathode with the SG/PU can enhance the power density by 15- fold and the current density by 9.8-fold over the uncoated copper cathode. This study successfully demonstrated that improved performance in the seawater batteries can be achieved by modifying the cathode electrode.

**KEYWORDS:** cathode, electrodes, graphite, polyurethane, seawater batteries

# Numerical Optimization of Elliptical-Bladed Savonius Wind Turbine for Low Wind Speed Application

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## ABSTRACT

Savonius wind turbine is a vertical axis wind turbine which has a simple design and easy to fabricate at a lower cost and can be operated at low-wind speed from any direction. However, this turbine has low efficiency, that's why numerous studies have been conducted to improve it. Elliptical shapes savonius has shown better power characteristics in previous research. In this study, the effects of six parameters of the rotor, namely Cut-angle, Cut -angle location, overlap ratio, rotor height, rotor diameter and material selection on turbine performance in terms of dynamic torque were studied and then optimized through the use of Response Surface Method for optimization and Computational Fluid Dynamics (CFD) Simulation. First phase of optimization and simulation is the two-dimensional model of various elliptical design blade. Second phase is the three-dimensional analysis for optimum rotor height, rotor diameter and materials. All of this simulation has been drawn and simulated with the use of SolidWorks Flow Simulation and optimized using Design-Experts. The best model was determined with the consideration of significant factors. Optimum value for the blade design of elliptical-bladed savonius that is suitable for low wind speed application was identified. Validation was done to compare the performance of the optimal and current design. Finally, the study shows that elliptical-bladed savonius has improved power coefficient with its new blade geometry.

**KEYWORDS:** Design Experts (CFD), Dynamic torque, Elliptical-bladed, Savoinus style wind turbine, SolidWorks

# Computational Fluid Dynamics Modeling of H-Darrieus Wind Turbine Airfoil using Central Composite Design

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## ABSTRACT

H-Darrieus blade is a type of vertical axis wind turbine that require low wind speed to operate but considered to be less efficient due to its conventional blade geometry. This study investigated the effects and interactions of varying the camber, camber location and thickness of the wind blade, to the dynamic torque. To optimize its blade geometry, the statistical method central composite design was used to generate the design of experiments. The Reynolds-Averaged Navier Stokes Equation (RANS) k – epsilon turbulence model of Solidworks Flow Simulation Software was used to simulate the experimental runs and numerically compute each dynamic torque. The results showed that the camber, thickness and their interactions have significant effect to the performance of the blade. The optimal conditions of the camber, camber location and thickness in 2D simulations are 4.75%, 45% and 15.50% of the chord, respectively. These optimal design values could reach the dynamic torque equivalent to 60.6571 Newton-meter. The dynamic torque of the optimal design obtained a 133% significant increase compared to the conventional blade, NACA 0015. Thus, the research has proven the increase in the performance of the Darrieus Wind turbine by varying its blade geometry.

**KEYWORDS:** airfoil optimization, blade camber, blade thickness, computational fluid dynamics, dynamic torque

# Secured Student Record Management, Dissemination and Document Integrity Checking System Using Modified RC6 and One-Time Password Encryption Algorithm

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## ABSTRACT

While multimedia is currently utilized for communication during this COVID-19 pandemic time, its growth has also made easy distribution and duplication. For universities, student/alumni educational records are official and confidential documents protected by one of the nation's strongest privacy protection laws, the Family Educational Rights and Privacy Act (FERPA). With the emerging increased use of applications such as student information system (SIS) and learning management systems (LMS), consequently raised security concerns ensuring its confidentiality, integrity and availability. In this study, student records were converted to multimedia data like image data for content sharing and transmission of student information via internet while achieving its security aims using modified RC6 as encryption algorithm and one-time password (OTP) algorithm. Statistical analysis and runtime execution analysis were conducted based on considered metrics such as avalanche effect, correlation coefficient, mean squared error and the speed measurement of encryption and decryption process. The quality of encryption was improved as evidenced by the 54.69% avalanche effect, which surpasses the standard of 50%, a very low average correlation coefficient of 0.0022 for the horizontal, vertical and diagonal directions, and a high mean squared error (MSE) of 11,556. Based on the numerical and visual results of the actual runtime and automatic tests, the good qualities of encryption and authentication were achieved.

**KEYWORDS:** Encryption, One-time password, Privacy, RC6 algorithm, Record Management, Security

# Perceiving Highest Faculty Performance Using Classification Algorithms

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## ABSTRACT

This study examines the factors associated with the assessment of teacher's performance. The main objective of this study is to predict who among the faculty have the highest performance in terms of student's evaluation and head of the department (HOD) evaluation. One of the factors which will be the basis of student's evaluation and HOD evaluation is the teaching experience and strategy of the faculty. The common tool to evaluate faculty performance is the conventional method questionnaire based on student's perception. In this study the authors proposed three different classification techniques: Decision tree, Naive Bayes, and KNN algorithms are used to build classifier models that will determine the faculty performance. Their performances are compared based on the result of the three classifiers in terms of accuracy, precision, and recall. According to the results the Naive Bayes algorithm was better than others in which accuracy is 91.67%. In this paper data mining is utilized to analyze the student evaluation based on the faculty performance. Here the most important variables that separate "strongly agree" and "agree" faculty performance based on student perception are found. Hopefully, this can help faculty to improve their performance.

**KEYWORDS:** Decision Tree, Faculty Performance, KNN, Naive Bayes, Rapidminer

# RMS: E-Commerce Platform for Marble Industry in Romblon

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## ABSTRACT

Few marble merchants in the province of Romblon use social media to promote and sell their products while it is common to observe that businesses had evolved to make use of marketing technologies in reaching out thousands of consumers in the vast market on the internet. It doesn't apply to most, and only a few have the resources and knowledge to manage such advancement. Through this, the market needs E-commerce in the form of an online shopping platform base on Business-to-Consumers (B2C) hybrid market in which marble marketers could advertise, sell, offer services, and earn profit like the physical shop that they have long practice without sacrificing too much. The online market features the following standard; functional suitability, performance efficiency, compatibility, usability and user-friendliness, reliability, and portability of the system. These standards ensure that the users experience with the system is met, and the essential functions and features like Romblon marble product inquiry and viewing, online shopping and payment by consumers; promoting and advertising, product and inventory management, payment, and shipping transactions by merchants; Market legitimacy validation, system maintenance and updates by administrator, where at its most excellent functional operation and hassle-free services. The researcher presents RMS: E-Commerce Platform for Marble Industry in Romblon using the internet to provide better services to the consumers, merchants, and system administrators through an online shopping website.

**KEYWORDS:** B2C, E-Commerce, Marble, Online Shopping, RMS

# Power Capacity Assessment of Hybrid Diesel-Solar Photovoltaic Microgrid of Tablas Island, Romblon

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## ABSTRACT

The energy profile of Tablas Island has been demanding in the past years due to the emerging commercialization and even industrialization. Power capacity assessment was conducted in order to verify the sufficiency of power for supply in the coming years considering the increasing demand of energy. A forecast for annual power peak demand was considered in this study in comparison to the dependable capacity of the hybrid diesel – solar photovoltaic (PV) microgrid in Tablas. It shows that the power peak demand from 2018 to 2030 is significantly increasing from 7.194MW to 13.023MW. The 8.8 Mega-Watt (MW) diesel-fired power plant has dependable capacity of 6.16MW to 7.04MW from its 70% to 80% plant utilization respectively. The 7.5MW peak solar PV power plant has the maximum AC power capacity of 5.28MW. These power plants were the composition of the hybrid microgrid delivering efficient power ranging from 6.798MW to 8.893MW. Based on the forecast data for annual power peak demand towards 2030, it only met the peak demand of 8.65MW in the year 2021 but this power did not meet the peak demand in the succeeding years. Several methods to augment the power capacity of the hybrid microgrid were suggested in this study considering the mixed application of conventional and the application of more renewable energy sources as power key-players for generation and distribution.

**KEYWORDS:** Capacity Assessment, Dependable Capacity, Hybrid Microgrid, Power Peak Demand Forecast, Solar Photovoltaic

# Site Suitability Analysis for Small Scale Irrigation Projects in the Provinces of Romblon and Marinduque through Geographic Information System-Based Water Resources Assessment

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## ABSTRACT

This study focused mainly on the identification of suitable sites for small scale irrigation projects in the provinces of Romblon and Marinduque through GIS-based water resources assessment. Collection of primary and secondary data and validation of existing small scale irrigation projects in the provinces of Romblon and Marinduque were conducted. All data collected were consolidated, analyzed and used in the processing of needed thematic maps using Geographic Information System and Remote Sensing techniques. Validation shows that Diversion Dams, Small Water Impounding Project, Shallow Tube Well, Pump Irrigation System Open Source are the main irrigation systems both in Romblon and Marinduque. Using the obtained coordinates, the location maps of validated existing Small Scale Irrigation Projects and suitability maps were generated. Analysis shows that Romblon and Marinduque have high suitability for SFR, STW, and PISOS development.

**KEYWORDS:** geographic information system, remote sensing, small scale irrigation project, suitability map, thematic map

# EXTENSION

# Educational Campaign on Bullying, Safe Spaces Act (Anti-Bastos Law) with Sexual Harassment

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## ABSTRACT

This extension program is designed to reach out to students, teachers, guidance coordinators, gender and development coordinators, and school administrators that aimed to provide educational knowledge and awareness for high school students and have regarding the various types of violence such as bullying, sexual harassment, VAWC as well as knowledge on the newly enacted law entitled Safe Spaces Act. This extension program targeted high schools in 7 municipalities within Tablas Island (excluding Odiongan) as its participants. Needs assessment were conducted prior to the implementation of educational campaign and was conducted among 134 students and 36 teachers from the selected schools. Results from the needs assessment has found out that majority of the respondents have experienced or encountered a form of violence, however, they lack ways on how to assert themselves during the situation. From this, the educational campaign was conducted to empower the students on the various forms of violence and what they can do to overcome it.

**KEYWORDS:** Bullying, Educational campaign, Safe spaces Act, Sexual harassment, Students, VAWC

# LITERACELL: A Literacy Program for PDLs in the Romblon Provincial District Jail

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## ABSTRACT

This paper presents the description and initial assessment of the PDL literacy project of the RSU – Romblon Campus in the municipality of Romblon. The project is in line with the goals of the campus which are to provide extension services in order to extend educational expertise for community development, strengthen partnership with communities and nurture the culture of service by helping other communities. The program generally aims to: help address the problem of illiteracy among some of the PDLs in the provincial jail as well as assist them in their re-entry into the society. As such this paper describe the implementation of the literacy program; describe the result of its initial assessment in terms of its delivery, and participation of the PDLs; determine the program's initial impact to the beneficiaries; determine the program's strengths, and problems encountered. The volunteers, teachers, jail officers and beneficiaries were the primary sources of data. The data were gathered through interview and questionnaire. The project was implemented through the following activities: planning & conceptualization of the program, selection of volunteers, selection and evaluation of materials to be used in the program, scheduling of reading session and orientation of volunteers, reading program activities, monitoring, and assessment. A total of 53 beneficiaries participated in the project with 14 of them having literacy needs. In terms of delivery most of the respondents said that it is structured and organized; PDLs actively participated during the session. The initial assessment of the program revealed that: literacy skills of the 14 PDLs have improved; interest in reading was enhanced; the spirit of volunteerism was developed among the volunteers. The friendly volunteers and the varied activities were among the strengths of the project. Availability of some PDLs with literacy needs, inadequate facility for both lecture and tutorial activities, unexpected release of the PDL-tutees resulting to difficulty in following-up of their literacy skills, and availability of time for faculty in assisting the volunteers are still some of the primary concern encountered in the implementation of the program.

**KEYWORDS:** Literacy, Extension Program, Persons Derived of Liberty

# "Kumustay Ra Ka?": A Psychosocial Support Project for COVID-19 Frontliners in Odiongan, Romblon

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## ABSTRACT

The COVID-19 Pandemic has brought the world to its knees. Mitigation programs were spearheaded by different countries in a frantic race to develop a vaccine against COVID-19. To date, around 9,708 health workers, 5,929 police, and 1,137 military personnel tested positive for COVID-19 (DOH, 2020). In Odiongan, no frontliner has tested positive for COVID-19 but they remain susceptible due to nature of their work. The College of Education, in partnership with the Local Government of Odiongan, initiated this psychosocial support project to support the frontliners. The program is called Psychosocial Support Project, a psychological initiative that aims to identify the frontliners' causes of stress and present coping mechanisms into it. Fifty-nine (59) frontliners were identified as participants. The Perceived Stress Scale (PSS) for COVID-19 Issue underwent validation by five (5) experts in Psychology. An interview guide was also used to gather relevant data from the participants. The results show that 48 or 81.36% have average level of stress, nine (9) or 15.25% have low level of stress, and two (2) or 3.39% experienced high level of stress. Among those that contribute to stress are extended work hours, undisciplined members of the community, and threat of COVID-19 to the community. Coping mechanisms include observance of health protocols, family time, and faith to God. Intervention projects against stress must be held to reduce and ameliorate stressors. This project is implemented, monitored, and sustained by the CED's Extension Unit in support with the United Nations' Sustainable Development Goal 3 – Good Health and Well-Being.

**KEYWORDS:** COVID-19 pandemic, frontliners, Odiongan, psychosocial support, stress

# "Isip Mo, Pangalagaan Ko": A Mental Health Awareness Program for Selected Senior High Schools in Tablas Island, Romblon

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## ABSTRACT

Mental health is very essential and therefore be treated equally as physical health. Wellness includes not only physical but mental health because the latter is crucial to the person's ability to live a fulfilling life. The primary goal of this study was to explore the life experiences related to mental health issues such as stress, anxiety and depression of Senior High School Students in Tablas Island, Romblon. Furthermore, it looked into the contexts or situations that typically influenced their experiences as well as their coping mechanisms. This study employed qualitative approach specifically the Interpretative Phenomenological Analysis which examined the data obtained from the participants through a semi-structured interview. Purposive sampling with a set of criteria was used as guide in selecting 8 participants. Contextually, several themes emerged such as stressful issues in life, evidences of anxiousness, depressive feelings and behaviors, negative sources of mental distress and varied coping mechanisms. These findings signify vital information about parents, teachers, significant others and other allied helping professionals and may serve valuable springboard for future research in this area.

**KEYWORDS:** anxiety, coping mechanisms, depression, mental health issues, stress

# Thinking Green: Developing Sustainable Coastal Communities through Education on Mangrove Conservation and Rehabilitation

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## ABSTRACT

The continued decrease in the mangrove forest of San Andres are caused by the combined effects of human activities and natural disasters resulting to reduced recruitment and very slow forest expansion. To mitigate this event, an intervention has been developed to increase the knowledge and participation of the different stakeholders (member of the coastal community including youth, women, and fisherfolk as well as the barangay LGU) in the rehabilitation, conservation, and management of the mangrove forests in the Municipality of San Andres. This extension activity were participated in by 238 attendees from 7 coastal barangays of San Andres where they completed the mangrove conservation and rehabilitation training, which is attended by 55.46% females and 44.54% males. After the training, there is a significant increase in the knowledge gained by the participants based on the results of the pre- and post-examination ($t(6)=-11.35$, $p<0.001$). A community-managed mangrove nursery sites were established in each coastal barangay, where Barangay Mabini is designated as a demo-farm. Each mangrove nursery site is managed by a bantay-dagat group, with support from the barangay LGU. During the conduct of the training, 238 copies of translated to Filipino mangrove rehabilitation and conservation handouts, 7 sets of laminated mangrove identification guide (one for each barangay), and 35 mangrove conservation-related posters (five pieces for each barangay) were distributed. Continuous monitoring of the established community-based mangrove nurseries, along with the statistical analysis of monitoring results will be undertaken to ensure continuity of the project.

**KEYWORDS:** coastal community extension, community resilience, mangrove forest sustainability, mangrove nursery, mangrove training

# Site Suitability Analysis for Small Scale Irrigation Projects in The Provinces of Romblon and Marinduque through Geographic Information System-Based Water Resources Assessment

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## ABSTRACT

As implementing agency focusing on SSIP GIS-based suitability mapping and human resource development, the team conducted training for the Provinces of Romblon and Marinduque with the title "Seminar-Training Workshop on identifying Suitable Sites for Small Scale Irrigation Projects (SSIPs) in the provinces of Romblon and Marinduque''. The participants are the target beneficiaries and end users of the said project such as LGU's, researchers, engineers from the Office of the Provincial Agriculture, Municipal Agriculture Office, Agricultural Technicians and National Irrigation Administration. Some faculty and students from Romblon State University and Marinduque State College were also invited. The said trainings were good avenues for the participants to harness their skills in GIS software, exchange ideas, and appreciate more the importance, advantages, features, and uses of water resource assessment using GIS or Geographic Information System. The training capacitated the researchers and extensionists and retooled the provincial and municipal agricultural technicians on the use of developed protocols and science tools. The end-users learned the importance of geospatial information and were trained to provide an efficient decision tool in policy making and development planning which promote optimal utilization of resources both physical and financial resources.

**KEYWORDS:** geographic information system, remote sensing, small scale irrigation project, suitability map, thematic map

# Electronic Document Processing for Barangay Officials and Employees

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## ABSTRACT

This extension activity aimed to equipped the chosen clienteles the chance to gain technical learnings and knowledge in able to cope with the recent trends in technology. The title of the extension program is "Electronic Document Processing for Barangay Office Employees/Officials " (A Training / Workshop on Documents & Template Designing). The extension clients is composed of six (6) barangay officials/ employees. The total number of participant were twenty four (24) clients per cluster, the activity is divided into three (3) clusters which composed of four Barangays per cluster The extension program was being funded by both the Local Government Unit of San Fernando and RSU Research & Extension Committee. Equipment's and other facilities is being provided by the proponents. The lectures and hands-on is being held at RSU-San Fernando Campus computer laboratory which is being undertaken by the faculty members of Technology Education Department. The activity lasted for almost twenty six (26) days which is eight hours per session and divided into two levels Level I for beginners and Level II for Advance Learners. The first cluster coverage date is from June 2019 to December 2019 which is composed of barangays from Canjalon, Otod, Campalingo and Azagra.

**KEYWORD:** EDP-Barangay

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Romblon State University
Odiongan, Romblon

# SUPERVISION, ADMINISTRATION, LEADERSHIP, AND MANAGEMENT

# LET Performance of RSU System for the Last Five Years: Are We Meeting the Demand for Quality or Quantity?

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## ABSTRACT

The effectiveness and quality of any Teacher Education Institutions (TEIs) in the Philippines is assessed based on their graduates' performance in the Licensure Examination for Teachers (LET) given by the PRC. To provide quality education to its constituents, Romblon State University System as a TEI needs to be assessed regularly of its LET performance. This study, therefore, was initiated to measure the performance of RSU graduates in the LET for the past five years. The study made use of the Data Mining Technique. Data sourced out from the PRC, CHED, and the RSU suggest that the number of examinees both first-time takers and the repeaters specifically, continue to increase while the number of passers continue to decrease. Norm-referenced observation of the LET performance from the national passing percentage revealed that BSEd graduates perform better than the BEEd graduates, particularly when the exam is taken during the 3rd quarter where half of the examinees are first-time takers. Moreover, first-time takers have a higher chance of passing compared to repeaters. The findings call for an effective measure to see to it that the institutions' passing rate would improve and that the demand for quality teachers is given priority over quantity.

**KEYWORDS:** Licensure Examination for Teachers, LET performance, Teacher Education Institution

# Employability of Graduates in a State University towards Program Enrichment

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## ABSTRACT

Employability is a challenge for graduation in a State University due to their failure to meet the current labor market expectations. State University has been blamed for producing graduates who fail to meet employment demands in the labor market. This study aimed to determine the employment aspects and assess the extent of the contributory factors that helped the graduates to be developed; extent of the course on the overall college life experience and the extent of this satisfaction of the graduates of Bachelor of Science in Business Administration of RSU San Fernando Campus, school year 2014-2017. Based from the obtained data from Register Office of Romblon State University, San Fernando Campus it has a total population of 232 BSBA graduates. Thus, total respondents of 147 as samples were selected. In this study, stratified random sampling was employed in choosing the respondents. Respondents were randomly selected to answer the self-made questionnaire prepared for the study. Nearly 72% of the respondents were female employees 61% surveyed were 21-25 years old, 85% were single. The research utilized the descriptive quantitative method of investigation to analyse the study. Out of four items indicated that the programs and services were effective for graduates' employability. Particularly, the graduates perceived that company tour, on-the-job-training, seminars, and workshops were effective in securing jobs. Meanwhile, the respondents who are now working in the business institutions responded that seminars were absolutely effective in their employment while BSBA students now working in different companies said that computer literacy was most relevant.

**KEYWORDS:** Employability, Business Graduates, Seminars, Computer Literacy

# Forecasting Enrolment: A Substitute to Career Guidance Campaign

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## ABSTRACT

The use of forecasting models is essential for advanced decision making and planning. The conduct of the career guidance campaign of guidance counselor and teacher has been a challenging task in a time of community and border restriction. The current study is analytical in nature and is conducted to determine factors that can predict and forecast the number of Junior High School enrollees basing the eleven-year historical records. The data were gathered from the school registrar, guidance counselor, and Philippine Statistics Authority (PSA). The unemployment rate, sex, parents' educational attainment, honors, the distance of the school from home, parent's income, employment of parents, and government beneficiaries are found significant predictors of enrollment. There were two forecasting models found and by confirmatory factor analysis (CFA) by structural equation modeling (SEM), the most appropriate model is $Y = -1.714 + 0.335x_4$; where Y is referred to the number of enrollment and $x_4$ refers to parents' educational attainment. Experimental results yield an average of 1.26% difference in the forecasted and actual numbers of enrollment. The forecasted enrolment using the most appropriate model was then undergoing validation and the model forecast was accepted.

**KEYWORDS:** AMOS, CFA, Enrolment, Forecasting, SEM

# Implementation of Special Program on Sports in Region IV-B: Basis for Proposed Training Program

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## ABSTRACT

The focus of the study is to assess and to evaluate the level of implementation of Special Programs in Sports in Region IV-B which was stipulated in DepEd Order No. 25, s. 2015. It aims to address the needs of talented students in different sports discipline, in terms of Program Description, Program Objectives, Basic Sports Requirement, Sports Equipment and Facilities, Time Allotment, Admission to the Program, Transfer to the SPS, Retention to the Program, Student Support, Evaluation of Student Performance, Number of Class size, Teaching Load, Requirements/Qualification to offer SPS, School Manpower Resources, Child Protection, Procedure for Adoption of the Program, Program Support and Program Monitoring and Evaluation. Data were collected using survey questionnaire and interview. There were 530 students and 56 MAPEH Teachers who served as respondents in this study. The findings revealed that Archery, Gymnastics and Tennis for individual sports and softball and baseball for team sports were not implemented, the sports equipment and facilities including the trainings that are held outside school hours were not highly implemented as assessed by MAPEH teachers in the four divisions of MIMAROPA region. With regards to the assessment of MAPEH teachers and students with reference to Time Allotment, Student Support, Evaluation of Student Performance, Number of required class size and Child Protection, this study revealed that these were highly implemented.

**KEYWORDS:** Special Program in Sports, Sports Facilities and Equipment, Sports Performance, Student Mentoring, Teachers' Competency, Teachers' Influence and Teaching Load

# Management Competencies, Self-Efficacy and School Climate on Administrative Performance among Principals and School Heads in the District of Romblon

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## ABSTRACT

This descriptive research study attempted to determine the level of principals'/school heads' management competencies, self-efficacy and status of school climate, their relationship as a whole and when grouped according to gender, age, salary, number of years as principal/school head and educational attainment. The respondents of the study were the seven principals or school heads of schools and 126 teachers in the seven big school in the District of Romblon. The researcher adapted questionnaire from National Competency-Based Standard for School Heads (NCBSS) issued by Department of Education with DepEd Order No. 32. S. 2010 to measure the management competencies, the Principal's Sense of Efficacy Scale developed by Tschannen – Moran, et al. cite and revised by Polm (2016), to determine the level of principal's sense of efficacy. The Organizational Climate Descriptive Questionnaire for Elementary/Secondary Schools (OCDQ) developed by Hoy, Tarter, and Kottkamp and revised by Douglas (2010) was adapted to determine the climate among schools. Indeed, the study revealed that the level of school heads' management competencies, self-efficacy, climate, and administrative performance are interrelated, complementary and affect each other as affirmed by the principals and teachers. Based on the findings, it is integral not only for the principals to be efficacious and competent in doing their roles, but they have to imbibe values in doing so. These values will strengthen the desire for consistency and sustainability of school heads', management competencies, self-efficacy, and cultivation of positive school climate among school in the District of Romblon.

**KEYWORDS:** administrative performance, management competencies, self-efficacy, school climate

# Examining Organizational Change Capacity in Local Government

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## ABSTRACT

It is a cliché that change is inevitable, but it is what it is. For any organization, change is a constant thing. If a leader's mandate is to prepare the organization for change in the future while delivering results in the present, then specific preparation is required. Recent studies on organizational change were done on private and big organizations but are limited on local governments where change is also a common thing. This study gave focus on the organizational capacity for change of the municipal employees in one of the towns in Romblon, Philippines. There are six dimensions of change capacity namely, facilitative culture, supportive infrastructure, different change approaches, ongoing strategizing, sufficient resources and willingness and ability to change that were the basis of this study. Based on the result of the study, the dimension that has the highest change capacity is the different change approaches which show that these employees understood different approaches to change by using appropriate methods and strategy. They gave importance to expertise, accept coaching and consulting, share best practices, and inform people of the changes to happen. There is proper dissemination of information in the organization by debriefing people and giving importance to learning and experience. Overall, the organization is ready for any organization change in the future depending on the mandate of its leader.

**KEYWORDS:** adaptation to change, capacity to change, development, government, leadership, organization

# Organizational Culture and Leadership Praxis: Basis for a Proposed Leadership Framework

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## ABSTRACT

The organizational culture is broadly considered one of the most important factors in managing an organization. The behavior of each employee is greatly influenced by its group and thereby diverse culture of employees is expected and it challenges the manager's ability in handling behavior at work, managerial practices, and organizational effectiveness and efficiency. This study determines the status of organizational culture and leadership praxis in selected Elementary Schools in the District of San Agustin, Calatrava, and Sta. Maria. A descriptive correlation was applied using mixed-methods and exploratory design. Respondents for the quantitative method were 24 principals and 246 teachers and a total of 26 stakeholder -respondents representing LGU officials, Barangay Council members, SK officers, and PTA officers participated in focused group discussion for the qualitative method. Results showed that most of the principal-respondents were young in the service and very able to do their duties and responsibilities, while teacher-respondents were mostly young and ready to accommodate and sustain changes. Most of the stakeholder-respondents were experienced individuals and ready to extend services to the school constituents. The perceived level of organizational culture among elementary school principals and teachers in terms of achieving goals, coordinating teamwork, and building a strong culture was rated and described as very high (VH). It shows respondents were well-oriented of the vision, mission, goals, and objectives of the institution. In terms of leadership praxis, they were considered vision-directed, motivators, and enthusiasts, especially in managing the demands in the global and local settings as well as good in problem-solving.

**KEYWORDS:** Organizational culture, leadership praxis, behavior at work, and managerial practices

# Improving Food Availability and Access through Participatory Intervention in Selected Cities in Metro Manila: A Policy Options

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## ABSTRACT

Employability is a challenge for graduation in a State University due to their failure to meet the current labor market expectations. State University has been blamed for producing graduates who fail to meet employment demands in the labor market. This study aimed to determine the employment aspects and assess the extent of the contributory factors that helped the graduates to be developed; extent of the course on the overall college life experience and the extent of this satisfaction of the graduates of Bachelor of Science in Business Administration of RSU San Fernando Campus, school year 2014-2017. Based from the obtained data from Register Office of Romblon State University, San Fernando Campus it has a total population of 232 BSBA graduates. Thus, total respondents of 147 as samples were selected. In this study, stratified random sampling was employed in choosing the respondents. Respondents were randomly selected to answer the self-made questionnaire prepared for the study. Nearly 72% of the respondents were female employees 61% surveyed were 21-25 years old, 85% were single. The research utilized the descriptive quantitative method of investigation to analyse the study. Out of four items indicated that the programs and services were effective for graduates' employability. Particularly, the graduates perceived that company tour, on-the-job-training, seminars, and workshops were effective in securing jobs. Meanwhile, the respondents who are now working in the business institutions responded that seminars were absolutely effective in their employment while BSBA students now working in different companies said that computer literacy was most relevant.

**KEYWORDS:** food security, govermentality, National Food Authority, non-government actors, rice policy, and state regulation

# Status of the Barangay Disaster Risk Reduction Management Committee in the Municipality of Ferrol, Romblon

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## ABSTRACT

Over the past decades, millions of Filipinos have been adversely affected by natural disasters. As an archipelago situated in the Pacific Ring of Fire, Philippines is highly vulnerable to the impacts of natural disasters, including the global phenomenon and climate change. Despite of the fact that the Philippines has a comprehensive regulative framework for Disaster Management, in reality the capacities at the local level are still weak and must be strengthened in order to avoid a high number of unnecessary casualties in future disastrous events. In this paper, a review is provided with regard the status of the Disaster Risk Reduction Management Committee in the barangay level in terms of disaster emergency response, preparedness, prevention and mitigation, and recovery and rehabilitation. The study concludes that disaster preparedness should be the priority program to be undertaken by the municipality, and the need for the emergency response equipment's to be provided.

**KEYWORDS:** Barangay Disaster Risk Reduction Management Committee, Emergency Response, Preparedness, Prevention and Mitigation, and Recovery and Rehabilitation

# Barangay Officials' Knowledge on Parliamentary Rules and Procedure: Basis for Extension

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## ABSTRACT

Parliamentary procedure is a collection of well-established rules designed to transfer activity in a meeting while preserving order and overseeing conversations. Its goal is to help groups achieve their tasks through an organized, and democratic process. This study is intended to determine the level of knowledge of barangay officials' in parliamentary rules and procedure and as well as to proposed recommendation to strengthen the knowledge of the officials. A descriptive-survey method was utilized in this study. Ninety (90) selected barangay officials coming from ten (10) randomly selected barangays were the respondents of the current study. The result showed that the common profile of the barangay officials are they were majority composed of middle ages, male officials, married, college graduate, and second termer. The profile with the highest mean value in terms of knowledge to parliamentary rules and procedure are as to educational attainment is the post college graduate at a "Good" level; as to barangay is the barangay Madalag, as to age is the middle ages, as to civil status is the married, as to sex is male; as to term is the first termer with an "*Average*" level of knowledge, respectively. During this pandemic and for the benefits of the barangay officials, series of webinar-workshop and/or short courses maybe conducted by the College of Arts and Sciences in cooperation of the Local Government Unit to strengthen the knowledge on parliamentary rules and procedure of the barangay officials.

**KEYWORDS:** Barangay Officials, Knowledge, Parliamentary, Rules, Procedure

# Gender Mainstreaming Program in Municipality of Alcantara, Romblon

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## ABSTRACT

This study focused on the assessment of gender mainstreaming program in the Municipality of Alcantara, Romblon during the fiscal year 2018-2019. Descriptive–evaluative method of research was employed using the questionnaire as primary data gathering instrument. The sample respondents of this study were the 12 elected municipal officials and the 268 women. The statistical tools used to analyze the data were percentage, weighted mean and t-test. The study found out that the municipal officials were "aware" while women respondents were "fully aware" toward gender equality; the implementation of Gender and Development Program was perceived by municipal officials as "implemented" while women respondents perceived it as "very much implemented"; municipal officials and women respondents "agree" on the different ways in which gender mainstreaming program raise the participation of women in decision-making; there were no significant differences of perceptions between municipal officials and women-respondents toward the equality of gender implementation of Gender and Development, and extent of women's' participation decision making in municipal governance. Majority of respondents perceived that lack of awareness and commitment among local government officials is the most pressing problem.

**KEYWORDS:** Gender Equality, Gender and Development Program. Gender Mainstreaming Program

# Green Local Government Policies on 'No Single-Use Plastics' and Its Effect to Operation and Financial Performance: Case of Green Practices Adaptation on Selected Casual Dining Restaurants in Odiongan, Romblon

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## ABSTRACT

Environmental issues are becoming an endless research topic. Many companies are taking part in the social responsibility of saving the earth. Green practices are now the focus of many countries. In our country, the Republic Act No. 9003 series of 2000 has been issued, which provides for an ecological solid waste management program. With this, the town of Odiongan in Romblon Province has started to implement the 'no single-use plastics' ordinance. It served as a challenge to the restaurants and other establishments to use paper materials instead of plastics. This study aimed to identify the local green policies related to restaurant operations. It also tried to determine the perceptions of the owners/managers about the green policies mandated by the local government. Then it assessed the effect of green policies on the restaurant's operations and financial performance as perceived by the owners/managers and determined the various green initiatives and practices of selected restaurants in Odiongan. The study applied the descriptive-qualitative method. Results show that the municipality of Odiongan had a hard time fully implementing its green policies. The restaurant owners and managers were not properly oriented with the 'no single-use plastics' policy. They also had problems in looking for suppliers that would provide an alternative to plastics at low cost. The financial performance of the restaurants was at risk due to changes in the cost of materials. Lastly, there is a strong inverted U-shape relationship between working capital and profitability, meaning that an increase in working capital hurts profitability in organizations with positive working capital (and vice-versa).

**KEYWORDS:** Green Policies, Green Practices, Odiongan, Ordinance, Single-Use Plastics

# Potential of San Fernando, Province of Romblon as Ecotourism Destination

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## ABSTRACT

Sibuyan Island has been blessed with diverse nature and is considered as the Galapagos of Asia. It is rich in flora and fauna were some are endemic to the place. These characteristic opens the door of opportunity for ecotourism industry. Ecotourism is an ecological based tourism that is now one of the growing industry in the country. Thus, this study was conducted to determine the potential of San Fernando, Romblon on becoming an ecotourism destination. Its main objective was to identify different sites favorable for the industry and how strong it is to compete in the market. Guided by enhanced Ecotourism Opportunity Spectrum (ECOS) the study focused on biological-physical structure, socio-cultural structure, historical-archeological value, and economic structure. Data gathered revealed that the eco-tourism site of the municipality possesses the primary factors used by tourist as consideration in selecting destination. These include accessibility, properly maintained thick forest, clean and relaxing environment and has hospitable people. However, the municipality has limited dining places and recreational activities. Results also show that plant and animal production is low making supply not enough to cover the demand of the community, while transportation infrastructure and healthcare services are limited. With the result, it is therefore concluded that the Municipality has a strong potential for ecotourism. To strengthen this potential, it is strongly recommended that transportation infrastructure, healthcare services, and animal and plant production be prioritized and consider analyzing Limits of Acceptable change to determine the degree of acceptance of impacts and control over level of use.

**KEYWORDS:** ECOS, Ecotourism, Ecotourism Potential, San Fernando Romblon, Tourism

# Department of Science and Technology Small Enterprise Upgrading Program: An Evaluation

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## ABSTRACT

The Small Enterprise Technology Upgrading Program (SETUP) is a strategy of the Department of Science and Technology (DOST) to encourage micro, small, and medium enterprises (MSMEs) to adopt technological innovations and improve their products, services, operations, productivity, and competitiveness through technical and financial assistance. This paper evaluates SETUP by examining the following: (1) program alignment/ relevance to DOSTs purview, (2) presence and appropriateness of inputs, (3) implementation of procedures, (4) program's effectiveness in improving business operations and socio-economic conditions of its recipients using context, input, process, product (CIPP) model. Through complete enumeration (n=63), quantitative and qualitative data were gathered using questionnaires and document review. Data were analyzed using means, Wilcoxon Sign – Test, and Kruskal Wallis (5% significance level). This paper showed that there is a significant increase in business operations (market, sales, production, net income) of MSMEs after applying to SETUP with p = 0.000 (2-tailed). Also, on average, respondent MSMEs agreed that SETUP positively affected their business operations and economic condition ($\bar{x}$ = 3.34 and 3.04). Based on these findings, SETUP is deemed (a) relevant and responsive to the needs of MSMEs given their low business operations and socio-economic condition before the program, (b) effective in attaining agency's purview, (c) has sufficient budget and competent staff and (d) is well-implemented. Likewise, the program can significantly influence the capacity of its recipients to improve their business operations and their way of living. SETUP should continue providing opportunities for eligible MSMEs to achieve sustainable inclusive economic growth.

**KEYWORDS:** DOST, effectiveness, evaluation, government program, SETUP

# Socio-Economic Impact of ROMELCO's Cantingas Minihydroelectric Power Plant on Farmers in San Fernando, Province of Romblon

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## ABSTRACT

This study sought to discover the socio-economic impact of ROMELCO's Cantingas Mini-Hydroelectric Power Plant (CHPP) on the Farmers in San Fernando, Province of Romblon. To be able to answer the researcher's questions, the descriptive research method through quantitative approach was used. The population of this study were the farmers-community of San Fernando, Romblon. A set of survey questionnaires was distributed and administered to the respondents to obtain the necessary data. Out of three hundred forty-five (345) farmer respondents, 74.20% were males, and majority of them were married. As to their age, 33.04% of respondents' ages ranged from 46-55 years old and 48.70% earned below Php 10, 000. Results revealed that the major social impact of ROMELCO's Mini- hydroelectric power plant is that, it increased benefit from water use for rural and livestock purposes. From the findings, the researcher concluded that the mini-hydroelectric power plant is economically competitive renewable source of energy and reduced fossil fuel consumption of the household for lighting and cooking. In terms of impact on income, most of the respondents agreed that the ROMELCO's mini-hydroelectric power plant is significantly increased their livelihood sources. Impact on electricity bill, consumption and supply, majority of the respondents strongly agreed that, through establishment of the mini-hydropower plant, the use of candle and kerosene for lighting of the community was drastically decreased. In terms of impact on agricultural production, respondents agreed that the said mini-hydroelectric power plant increased crop output such as rice and corn production due to irrigation system development.

**KEYWORDS:** economic impact, mini-hydro, renewable energy, social impact, socio-economic impact

# Perception and Patronage of Online Business Among College Students in San Fernando, Romblon

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## ABSTRACT

The study investigated the perception and patronage of online business among the two hundred sixty-six (266) college students in Romblon State University-San Fernando, Romblon during the first semester for the S.Y. 2019-2020. It tried to describe the extent of online business in terms of knowledge and accessibility and their degree of patronage on online business in terms of platforms and products. A researcher-made questionnaire was used to gather the needed data. It is consist of three parts: socio-demographic of the respondents, such as; age, sex, civil status, year level and course, the extent of perception which was categorized to knowledge and accessibility, third was for patronage on online business which was categorized to products and their platforms being used. Results were tabulated and computer processed using Statistical Package for the Social Science (SPSS). The researcher used mean, frequency count, percentages, t-test, ANOVA, and Pearson r for statistical data analysis and interpretation. Results revealed that the extent of online business and the degree of patronage of college students were both high. There was a significant difference in the extent of online business when grouped according to course. Respondents Ages 20 and below, mostly female and belonged to BSBA got the highest percentage. There was a significant difference in the degree of patronage of the respondents on online business when grouped according to civil status and year level. Personalized website or pages got the highest mean. Lastly, the extent of online business and the degree of patronage is significantly related.

**KEYWORDS:** Online Business, Patronage, Perception, Platform, Product

# Fourth Industrial Revolution: Opportunities and Challenges on Higher Education Institutions (HEIs) Towards 2030 Sustainable Development Goals (SDGs) Agenda

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## ABSTRACT

The Industrial Revolution 4.0 or popularly known as “Industry 4.0” “4IR”, or “FIRe” is considered as one of the vital catalysts in the pursuit of the sustainable development goals (SDGs) that have been set by the United Nation in 2015. It also brings prospects to enhance the role of higher education institutions (HEIs) in providing advanced academic and life-long learning programs that will improve the competencies and skills of graduates to respond proactively to the impacts brought by these technological advances that somehow redefines the way people live and reshapes the operation of world economies today. In particular, this paper focuses on the relationship between Industry 4.0 and higher education, and how the former will be successfully integrated in higher educational system and consequently advance the human capital in developing countries like the Philippines to address local problems and to expand engineering and environmental professions that are capable to adapt to Industry 4.0 economy. This paper provides an intensive review of literature available, and the author’s point of view on the given topic/theme which provide a better understanding of the significant impacts of Industry 4.0 to civil engineering and environmental professions as well as informing these professionals to continually invest in lifelong learning - to become more relevant and indispensable workforce in the 21st century. Moreover, this also poses a greater challenge for civil engineering and environmental professionals who are “educators” in higher education to become more responsive for preparing graduates in facing the demands that the labor market offers.

**KEYWORDS:** Industry 4.0, sustainable development goals, higher education, technological advancement

# Emotional Intelligence, Consumer-Perceived Values, and E-Shopping Satisfaction: A Mediation Analysis

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## ABSTRACT

Filipinos' interests in online shopping is growing and businesses know that they should adapt to this new marketing landscape. In order to win, business managers should strategize on how to compete in satisfying their online customers. This paper explores the effects of emotional intelligence (EI) on consumers' shopping satisfaction (SS). Further, it studies if consumer perceived values namely utilitarian values (UV) and hedonic values (HV), mediate on the relationship between them. The respondents were the regular faculty of the Romblon State University, main campus who have engaged in online shopping. The researchers used descriptive statistics (i.e., mean, standard deviation), Shapiro-Wilk's test of normality, T-test, analysis of variance (ANOVA) and finally the linear and mediated regression analysis. The results show that EI affects HD and UV, and SS while HD and UV affect SS. Moreover, the results reveal that UV fully mediates and HD partially mediates on the relationship between EI and SS.

**KEYWORDS:** emotional intelligence, consumer satisfaction, hedonic values, utilitarian values

# Characterizing the Government's Preventive Measure in Combating COVID-19 Pandemic in the Philippines: A Content Analysis

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## ABSTRACT

By and large, COVID-19 pandemic is an unprecedented circumstance that impacted millions of people around the globe. This is a new strain of coronavirus that targets one's lower respiratory tract and most likely to infect those who are immunosuppressed. However, there is still no antiviral vaccine available to cure this virus and prevention is by far, the most effective practice against this pandemic. Thus, this qualitative paper answers the question, *What characterizes the preventive measures of the government to combat COVID-19 in the Philippines?* Employing qualitative method and with content analysis as its research design, it emerged the government measures using news articles of three major dailies in the country as its corpus of data. From the cool and warm analyses of the field text, findings revealed that there are four measures, labeled as 'preventive nodes' that the government has, namely: *communication node* which refers to government's way of disseminating the needed information and coming up with an alternative in saving the lives of many while vaccines are still on progress; *accommodation node* which pertains to supplementary efforts from the government in addressing health, social and economic concerns brought by COVID-19; *assessment node* which relates to the issues that have to be improved both of government and its people; and *impact node* which refers to government's way of reporting the cases that may indicate the result of their measure. It was concluded that these nodes may promote a sense of awareness and provide knowledge to the public, alleviate financial constraints, hunger and unemployment, come up with a better response and arrive at informed decisions in taking actions to impede this crisis.

**KEYWORDS:** COVID-19, pandemic, preventive measures, government, content analysis

# SOCIAL SCIENCES, HUMANITIES, AND EDUCATION

# The Asi Language of Bantoanon: A Description of its Verbal, Nominal and Adjectival Features

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## ABSTRACT

Asi belongs to the Astronesian languages and it is one of the three known languages in the Province of Romblon. This paper attempts to provide a description of the clause types of Asi which are categorized as Verbal and Non-Verbal Clauses. The paper also explores on the characterization of the existing nominal configurations including the marking system of the language. It further investigates the prevailing forms of adjectives and their morphological categories. Findings revealed that the grammatical features of Asi is also comparable to other Philippine languages, vis-à-vis Bisayan counterparts because this language also shares a common syntactic formations and marking system.

**KEYWORDS:** Asi Bantoanon, Adjectives, Nominals, Verbals, Philippine Languages

# Grammaticalization and Lexicalization: A Discourse Analysis of Modality Expressed in English and Romblomanon in Classroom Interaction and Conversation

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## ABSTRACT

The Romblomanon language had deeply influenced the learning process of acquiring English language as second language. This study focused on how Romblonmanon English learners expressed modality in English language contrasted to Romblonmanon language based on the grammaticalization and lexicalization of the two languages. Where English modality can be expressed by the process called grammaticalization in the form of mood, tense, aspect, etc. and lexicalization through lexical items (modal verbs, modal adverbs, modal adjectives, or some other lexical verbs). Romblomanon grammaticalization and lexicalization of modality could also be expressed in three universal semantic roles: Agent, Theme, and Location. This study used qualitative discourse analysis method using descriptive and contrastive approach to identify English and Romblomanon modals expressed in actual classroom interaction and conversation of Romblomanon students. The conversation and interaction is being recorded during their classes in two English subjects at Romblon State University. The recorded conversation and interaction are transcribed to identify modals expressed in the conversations. They are analyzed in terms of grammaticalization and lexicalization based on their Epistemic and Deontic meaning. Extracts from the two subjects of English major were analyzed in this study to identify the modality expressed by the students during classroom interaction conversation. These extracts were produced from transcription of audio-recordings taken during their actual class. The study found out that many Romblomanon English learners constructed their statement in Romblomanon and convert it literally to English statement. The Romblonmanon English learners are deeply influenced by the native tongue resulted to misuse of modality.

**KEYWORDS:** discourse analysis, epistemic and deontic, grammaticalization, lexicalization, modality

# Kabisaan ng Wikang Onhan sa Pagtuturo ng Iba't Ibang Uri ng Teksto: Gabay sa Pagbuo ng Sanayang Aklat

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## ABSTRACT

Mahusay at dekalidad na edukasyon para sa lahat ang pokus ng misyon at adhikain ng Kagawaran ng Edukasyon upang makabuo ng mga produktibo at kapakipakibanag na mga mamamayan ng Pilipinas. Kung gayun, inaasahan ang mga kagamitan at iba pang batis na makakatulong sa guro at mag-aaral ng isang pagkatutong mahusay at dalisay. Sa maraming taon, nanatiling mas mababa sa 75% National passing rate ng Nationa Achivement Test and Filipino kahit pa ang midyum nito ay wikang Filipino. Marami rin sa mga mag-aaral ang hilaw magsulat ng mga akda gamit ang wikang Filipino. Maliban dito, ang mga mag-aaral na nasa ilalim ng ADM na programa ay nakakakuha rin ng mababang marka sa mga pagsasanay at iba pang gawain kahit pa ang midyum ay Filipino. Sa isinagawang pag-aaral, lumabas na ang antas ng pagkatuto ng mga mag-aaral sa una at panghuling panukatang pagtataya gamit ang wikang Filipino at Onhan ay may malaking kaibahan. Ang malayang pagpagamit ng wikang Onhan bilang midyum ng pagtuturo at pagkatuto ay naging epektibo sa pagkatuto ng mga mag-aaral. Ang mahusay ring paggamit ng guro ng makabagong kagamitang panturo at estratehiya ay isang mainam na paraan upang maipaunawa ang mga aralin sa mga mag-aaral gamit ang wikang Onhan. Dahil dito, iminumungkahi ng mananaliksik na gamitin ang wikang Onhan/rehiyunal na wika bilang midyum ng pagtuturo at instruksiyon sa pagtuturo ng ibat ibang teksto. Ang paggamit ng mga batis o iba pang kagamitan na nakasalin sa wikang Onhan/ katutubo ay may malaki ring maitutulong sa mga mag-aaral na nasa anyong modular o mga batang hindi nakakapasok nang araw-araw sa mga paaralan. Ang ganitong mga rekomendasyon ay may malaking tulong sa mga online classes, blended learning, home education at modular classes.

**KEYWORDS:** ADM/modular, batis, kabisaan, kagamitang panturo, Onhan

# Native and Non-Native English Newspapers Editorials: An Analysis of Their Cross-Cultural Variations

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## ABSTRACT

Contrastive rhetoric studies have been established across linguistic backgrounds that distinguish cultural and intercultural differences of various genres. Editorial as a type of genre is primarily written to build and prompt opinions on a particular public issue. This genre also serves as a reflection of the writer's cultural and social influences. However, an editorial may vary across cultures based on the way the rhetorical elements are arranged in the texts. Therefore, this paper is an attempt to identify the common patterns used in the newspaper editorials of Canada, India, and China – representing Kachru's (1985) three concentric circles. Using the Generic Structure Potential (GSP) presented by Halliday and Hasan (1989), 24 English editorials were purposively culled from the four leading newspapers of each representative country. These editorials were analyzed based on the frequency count of rhetorical elements and the number of occurrences of these elements was compared using Chi-Square test. Findings revealed that the structural landscape of the three countries follow similar generic structure with both compulsory and optional elements. However, the uniqueness of the culture of the three countries is reflected on their command of the English language that either permits them or delimits them in their free flow of expression.

**KEYWORDS:** Contrastive Rhetoric, Newspaper Editorials, Generic Structure Potential, GSP, Rhetorical Elements, Systemic Functional Theory

# Phonological Interference in Standard American English, Oral Fluency, Motivation in Second Language Learning among Tatlong Rila First Year Students

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## ABSTRACT

One important factor in speaking English language is producing the correct sounds, stress patterns, rhythm and intonation. With the variety of first languages in the province, it is noticeably possible that the students' first language's accent and tone would lead to a wrong and overt pronunciation in L2 discourses. The study aimed at determining the phonological interference in standard American English, oral fluency, and motivation in second language learning among Tatlong Rila first year students of Romblon State University. This study utilized the descriptive-correlational research design using random sampling which provides the most effective tool for determining the condition of relationship that exists. This paper showed that majority of the respondents' have very low level of phonological interference as to word stress and low level as to intonation. Majority of the respondents' level of oral fluency is low and high in their level of motivation in L2 learning. The respondents' level of phonological interference in the Standard American English in terms of word stress does not affect their level of oral fluency. However, in terms of their intonation, respondents' level of phonological interference correlated their level of oral fluency. The level of phonological interference of Tatlong Rila in the Standard American English as to word stress and intonation correlates their level of motivation in second language learning. The respondents' level of oral fluency had nothing to do with their level of motivation in second language learning.

**KEYWORDS:** phonological interference, Standard American English, oral fluency, motivation, second language

# Development of Romblomanon Legends in Comics Form as Mother Tongue-Based Online Instructional Material in Asi, Onhan and Ini Languages

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## ABSTRACT

This study aimed to publish the Romblon legends in comic book form. Specifically, it aimed to investigate the background of Romblomanon legends in the three languages that could be used for promoting virtues and ethics of children who are still in the process of assimilating the culture of Romblon, investigate ways to conserve and develop these legends into Comic Book form, and determine the level of acceptability of the comic book as instructional reading materials (IMs) in the elementary level as rated by the Learning Resource Management Development System Team of DepEd. The Evaluation Rating Sheet for Story Books was used in determining the level of acceptability in terms of content, format and technical aspects; and solicited comments and suggestions from the respondents that served as inputs for the improvement and revision of the legends in Comic books form. This is a descriptive-evaluative investigation. The research area is the whole Romblon Province. The research sample was determined through a drag net method wherein key-informants, casual informants and general informants were identified in the field. Evidence was gathered from document analysis and field research. Data collection tools are observation, interviews and focus group discussions. The research was conducted in five stages: planning, development, validation, final output and dissemination. Of the five legends, ten Romblomanon values were extracted and incorporated into the stories. It is highly recommended that the streamlined 5-stages development process must be used for the comic book development of the rest of undocumented legends of Romblon.

**KEYWORDS:** comic book evaluation, culture, legends, online Instructional Material, Romblomanon values

# The Markings of You Know and I Mean in Philippine English: Their Occurrences and Functions in Spoken and Written Discourses

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## ABSTRACT

In most speech situations, speakers need markers that will help them manage, connect, and make their ideas coherent for their addressee. These are called discourse markers or DMs that are completely functional in both spoken and written contexts. This paper explores on the lexicalized phrases “You Know” and “I Mean” extracted from the Philippine English corpora. Findings reveal that these DMs function mainly as delaying tactics and are used to repair and patch-up unclear thoughts in an utterance. These markers are likewise seen to occur commonly in the medial-utterance position to prompt backchannels from addressees while maintaining the floor in a conversation. To conclude, these DMs are found to be overly used in spoken discourses based on its large percentage of hits in the corpora.

**KEYWORDS:** Corpus, Discourse Marker Pragmatic Marker, Spoken Discourse, Written Discourse

# "Paghihikayat" as a Cultural Value and Sales Skill: The Case of Selected Casual Dining Restaurants in Odiongan, Romblon

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## ABSTRACT

This paper investigated the Filipino cultural value paghihikayat as a selling skill of the waiters and perception of the customers as being persuaded. Paghihikayat or persuasion is an important skill in sales and marketing. This study involved five casual dining restaurants in Odiongan, Romblon. There were two groups of respondents: waiters, with 16 samples chosen through total enumeration technique; and customers, with 50 samples chosen using incidental sampling with 10 samples for each restaurant. Employing the descriptive-quantitative method, results show that most customers were female college students, 17-25 years of age, and single. They visited the restaurant from 2-5 times. While most of the waiters were female college graduates, from 26-32 years old, single, and have been working in the restaurant for 1-5 years. Amongst the sub-skills of paghihikayat, both groups of respondents agreed that communication was the least practice by the waiters, though they have perceived other sub-skills differently. The waiters gave the highest perception as they practice paghihikayat in contrast with the perception of the customers. Spearman rho indicated that there is no relationship between the demographic profile and perceptions of the respondents. Upon comparing the perceptions of waiters and customers, t-test shows that there is a significant difference on how the respondents perceived customer service and enthusiasm as sub-skills of paghihikayat. The researchers conclude that among the three sub-skills of paghihikayat, communication should be given more relevance for training. Learning how to communicate well to the customers can increase the sales of the restaurants.

**KEYWORDS:** Communication, Customer Service, Enthusiasm, Filipino Cultural Values, Paghihikayat

# Assessment of Sibuyan Mangyan Tagabukid's Status using a Modified Socio-Cultural Development Index (SCDI) and their Priority Development Agenda

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## ABSTRACT

The global agenda for 2030 is aligned in achieving sustainable development following a 'leaving no one behind' principle. This implies ending extreme poverty in all its forms, and reducing inequalities among individuals and groups of all genders and colors. This also puts priority to the poorest and most marginalized people including indigenous people around the world. In this study, we assessed the status of selected Sibuyan Mangyan Tagabukid communities in Sibuyan Island in the province of Romblon through the modified Socio-Cultural Development Index (SCDI) developed by Motin et al. (2006). Three indigenous communities namely Kabuylanan, Sinapawan, and Guintac-an from Cajidiocan and San Fernando municipalities are selected as representative of their whole community in consultation with Mangyan Tagabukid elders and tribal council. SCDI indicators are measured through surveys, focus group discussions, and meetings with elders, tribal chieftain and council members. Results show that Kabuylanan has the highest ratings on cultural integrity (0.869), and income and livelihood (0.366) while Sinapawan got the highest ratings on education (0.494). In average, Kabuylanan (0.519) has the highest SCDI score, followed by Sinapawan (0.509), and Guintac-an (0.465). Guintac-an has the least ratings in most of the indicators which can be linked on the decrease in the practice of their culture and the low community income despite the largest number of population among the three communities. The indigenous communities also identified their development agenda prior to their urgent needs and conceived a ten-year development plan for the Sibuyan Mangyan Tagabukid communities of Romblon.

**KEYWORDS:** development index, indigenous people, Sibuyan Mangyan Tagabukid, socio-cultural development index, sustainable development

# Self-Efficacy and Attitude as Predictors of Mathematics Performance of Senior High School Students

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## ABSTRACT

This study determined the relationship of self-efficacy, attitude, and performance in mathematics of senior high school students. Specifically, the study (a) described the level of mathematics self-efficacy of senior high school students in terms of mastery experience, vicarious experience-peers, vicarious experience-adults, social persuasions, and physiological state, (b) characterized the attitude of the student-respondents towards mathematics in terms of anxiety, confidence, enjoyment, and benefits/value, (c) described the mathematics performance of the respondents, (d) determined the significant relationship between self-efficacy, attitude, and mathematics performance of the respondents, and (e) determined the predictors of students mathematics performance. Simple random sampling was used in identifying the 229 samples from three (3) public secondary schools offering senior high school in the Tablas Island. The researchers used the validated Self-Efficacy and Attitude towards Mathematics questionnaire. It was found out that the student-respondents have moderate mathematics self-efficacy in mastery experience, vicarious experience-peers, vicarious experience-adults, social persuasions, and physiological state. It was also found out that there was a high level of attitude towards mathematics in terms of benefits/value and moderate level of attitude towards mathematics in terms of anxiety, confidence, and enjoyment. Majority of the student-respondents did not meet the expectation in terms of mathematics performance, but a significant percent of the group was average in the acceptable range of rating as significant relationship exists between self-efficacy, attitude and mathematics performance. The study revealed that the mathematics performance was predicted by vicarious experience-adults, benefits/ value, anxiety, and vicarious experience-peers.

**KEYWORDS:** anxiety, attitudes, mathematics self-efficacy, mathematics performance, predictors

# Structured Problem Solving, Math Ability and Physics Performance among Engineering Students

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## ABSTRACT

This study focused on the effect of structured problem solving and math ability on Physics performance among engineering students. It determined 1) Students' Physics performance in pretest and post-test; 2) Effect of students' mathematical ability on Physics performance in pretest and post-test; and 3) Interaction effect of teaching method and mathematical ability on students' Physics performance in pretest and post-test. Using quasi-experimental design, intact Physics classes were randomly assigned as either experimental or control. Experimental group were 56 Agricultural Engineering and Civil Engineering students, and control group were 61 Electrical and Mechanical Engineering students. Both groups were given math proficiency test, pretest and posttest in Physics. Analysis of variance showed that structured problem solving approach significantly improved students' Physics performance. High math ability students performed better in Physics than those with low math ability. It really matters if structured problem solving is considered in Physics instruction for better learning outcomes.

**KEYWORDS:** instructional approach, interaction effect, math ability, physics performance, structured problem solving

# Exploring the Mediating Role of Math Anxiety on Math Self-Efficacy and Math Performance Relationship

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## ABSTRACT

Teachers and parents have paid attention to students' performance in mathematics and their progress every year since having a solid background in mathematics helps students develop sophisticated perspectives and offers more career options. Although much research had already been done to improve the students' mathematical achievement, still varied constructs continue to play an essential role in the students' mathematical performance such as mathematics anxiety, and self-efficacy. This study, therefore, was conducted to shed light on the role of mathematics anxiety to the relationship of math self-efficacy and general mathematics performance of senior high school students. A total of 471 senior high students participated in the study with the aid of an adopted questionnaire using the survey method. Correlation test revealed the existence of a significant relationship between math self-efficacy and math achievement. The regression analysis showed that math anxiety partially mediates in the relationship between math self-efficacy and math performance. The partial mediation suggests that the lower level of math anxiety tend to strengthen the positive effect of math self-efficacy on the students' math performance.

**KEYWORDS:** Mathematics anxiety, Mathematics performance, Mathematics self-efficacy, Senior high school students

# Problem Solving Skill in Algebraic Worded Problems Among BEEd Students of Romblon State University, Tablas Campuses

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## ABSTRACT

This study was a survey study since it is one of the effective ways to gather data from respondents. Results revealed that most of the respondents are female. Most of their age ranged from 18-20 years old with a mean age of 20 years old the respondents got a mean grade of 81 which means that respondents attained a satisfactory proficiency level in solving algebraic worded problems. The results suggest that there is no significant difference between gender and proficiency level as to problem solving skills in Algebraic worded problems. In other words, the proficiency level towards problem solving skills among male and female are equal (t = -1.49). Moreover, researcher found no differences in performance. ANOVA confirmed that the main effects of age between proficiency level (.536) and communication skills (.275) were not significant. There is no evidence; however that age affects the proficiency level and communication skills of respondents. Furthermore, the researcher could observe that there is high relationship (significance level .01) between mathematical communication skills (r = 0.881) and proficiency level. While sex (0.141), age (0.057), visual (0.074), auditory (0.076), kinesthetic (0.087) learning styles attained negligible correlation.

**KEYWORDS:** mathematical communication, problem solving, learning styles, algebraic worded problems, visual, auditory and kinesthetic , algebraic worded problems, learning styles, mathematical communication, problem solving

# Problem-Based Learning Approach: Effect on Scientific Reasoning Skills Among Grade 12 Students

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## ABSTRACT

In this study, the effect of Problem-Based Learning Approach (PBLA) on scientific reasoning skills among grade 12 Science, Technology, Engineering, and Mathematics students in Odiongan National High School was investigated. The non-equivalent pretest-posttest control group quasi-experimental design was used by comparing two intact classes with 42 students each. One group used Conventional Teaching Approach (CTA) while the other employed the Problem-Based Learning Approach (PBLA). In PBLA, students were exposed to the following components of science instruction: overview of general concept; presentation of authentic problem; execution of PBL in groups; and Reflection. The data were collected using a standardized Scientific Reasoning Skills Test (SRST) and a validated and reliability tested researcher-made Achievement Test in Genetics (ATG). Using the respective pretest mean scores in SRST as covariate, One-Way Analysis of Covariance was used in testing the effect of PBLA approach. Findings found out that PBLA is effective in improving students' scientific reasoning skills with an effect size of 0.41. It is recommended that a longer investigation using PBLA may be done to ensure that the dosage of intervention is adequate. This study brings light to the importance of Problem-Based Learning in the improvement of scientific reasoning skills among high school students. The protocols, instruments, and activities developed from this study may be used by other teachers should they opt to adapt PBLA in their respective classes.

**KEYWORDS:** Problem-Based Learning Approach, Scientific Reasoning Skills

# Exploring Science Teacher Factors and Their Perceived Ease and Usefulness in Using Virtual Simulation for Teaching Science

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## ABSTRACT

Virtual simulation showed significant potential to help improve the quality of teaching and learning Science. This study aimed to determine the perceived ease and usefulness of Science teachers towards using virtual simulation for teaching science and the correlation of teacher factors to their perception. Thirty science teachers answered a questionnaire and the gathered data were analyzed using descriptive analysis and the SPSS Chi-Square Test. The result showed that more than 50% of the respondents strongly agree with nine of the parameters that means they believed that using virtual simulation will be easy and useful. Chi-Square test revealed that there is no correlation in the teaching experience and the type of school to the perception of the teachers. Generally, the study found out that regardless of the teaching experience and the type of school, most teachers strongly agree that using virtual simulation will be easy and useful for them.

**KEYWORDS:** manipulative, non-manipulative, perceived ease and usefulness, teacher factors, virtual simulation

# Development and Evaluation of Cognitive Game Application for Filipino Elderlies: A Design-Based Research

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## ABSTRACT

Many researches exposed that games have been pointed out as training interventions to remediate cognitive decline among elderlies. In this study, the game app developed were casual games which covered the cognitive domains of an individual: affect attention, executive functioning, memory, language and visuospatial function as indicated by Neurochemical theory, Localized theory and Process theory. The game app was investigated in complex real-life settings involving multiple variables, and various aspects of the design were refined using Design-Based Research composed of two cycles: ((I) Evaluating whether the game environment was accepted with the structure of cognitive training and exploring suggestions for its redesign to improve the usability; and (II) Designing and testing the game app to verify and refine its context and usability. Using the Technology Acceptance Model (TAM) questionnaire of Davis, the fifteen elderlies' participants showed high agreement on its usefulness and ease of use; and showed positive attitude and intentions toward using it. However, evaluation from the game developers proposed some more enhancements on interface, interaction and feedback mechanisms. This study suggests that the effectiveness of this game app as cognitive enhancer be tested in a larger scale and longer period.

**KEYWORDS:** cognitive decline, cognitive domains, cognitive game app, Design-Based Research (DBR), elderlies

# Subjective Well-Being and Helping Attitude of Teacher Counselors

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## ABSTRACT

This study examined the existing relationship between the subjective well-being (SWB) and the helping attitude of Filipino Teacher-Counselors in the Department of Education (DepED) with the use of Oxford Happiness Questionnaire (OHQ) and Helping Attitude Scale (HAS). It also assessed the relationship among the respondents' profiles and their levels of subjective well-being and helping attitude. Mixed methods design were used to gather and analyze the data from the complete enumeration of 172 respondents from the Department of Education, Division of Romblon. Results revealed that Filipino Teacher-Counselors are normally happy in life and are generally willing to help their student-clients despite the lack of training and experience for this additional work assignment. The subjective well-being of teacher-counselors is determined by their designation and length of service while their attitude to help is determined by their educational attainment. A significant relationship between subjective well-being and the attitude to help is found by this study.

**KEYWORDS:** subjective well being, helping attitude, teacher-counselors, oxford happiness questionnaire, helping attitude scale

# Teenage Pregnancy: A Mother's Perspective

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## ABSTRACT

This study was conducted to investigate the narratives of teenage pregnancy as to its causes, challenges encountered, and their regrets. A qualitative method of research was used in this study. Narrative - case study design was utilized in this methodology. It includes 10 respondents and data were gathered through the use of a semi- structured interview schedule. The following were the significant findings of the study: Majority of the respondents were at the age of 21 and got pregnant at the age of 16 – 19 years old. Most of them were first year college students when they got pregnant. Majority of the respondents were unmarried, unemployed and therefore dependent from their parent's income. Respondent's stories revealed that they got pregnant in their early age because of the curiosity of having sex with their boyfriend, socialization with their friends and family influences. It significantly shows in their narratives that the challenges they encountered in child bearing/raising were financial shortcoming, acceptance of the community, and their marital relation. Their pregnancy greatly affects their studies resulting in dropping out from school. Respondents confronted emotional stress during their pregnancy. It is commonly narrated by respondents that they regretted most in finishing their schooling and in seeking quality job.

**KEYWORDS:** Teenage Pregnancy, Causes, Challenges, Regrets, Narrative

# Parent-Child Communication and Psychological Well-Being of Drug Users: Basis for Psycho-Spiritual Therapy

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## ABSTRACT

This study was conducted in order to determine the relationship of parent-child communication and psychological well-being of the respondents. Specifically, it sought to determine the level of parent-child communication and psychological well-being of the respondents; tested the significant difference between parent child communication and psychological well-being of the respondents when grouped according to age, sex, and educational background, number of siblings, religion, and work before, monthly family income, educational attainment, and job occupation; tested the significant relationship between parent-child communication and psychological well-being of the respondents and proposed a psycho-spiritual therapy to improve family relationships. Descriptive and correlational-development research design was employed involving 70 drug users in the Bureau of Jail Management and Penology one Province in MIMAROPA Region. Three standardized tests were used and data gathered were treated as instruments using different statistical tools. Results showed that the respondents find their parents as someone who can be leaned upon and talked to about clarifications, God, financial matters and education. Respondents have the capacity to live a happy, satisfying and meaningful life, think of the family future, value family, want to grow and serve as provider. The study recommends constant communication between parents and child and a psycho-spiritual therapy that focuses on God, family values, personal growth and financial stability.

**KEYWORDS:** Parent-Child Communication, Psychological Well Being, Psycho spiritual Therapy

# Sex Difference in Risk-Taking Behavior and Emotional Intelligence of Adolescents

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## ABSTRACT

Several studies delved into emotional intelligence and were found out to have significant impact to one's life. Emotional Intelligence is an important indicator of a person's knowledge, skills, and abilities in the workplace, school, and personal life. However, no matter how emotionally intelligent adolescents are, still many of them nowadays involve in risk-taking behaviors which may endanger their life. The present study dealt with the emotional intelligence, engagement to risk-taking behavior and sex differences. The descriptive-correlational method of non-experimental design was used. Stratified random sampling was utilized to determine 1, 408 respondents. Two sets of measures such as the 2013 Youth Risk Behavior Survey and Bar-On EQ-i ²•⁰ were administered. Mean, t-test and Regression Analysis were used to analyze the data. Results show that adolescents have an average level of emotional intelligence. High level of engagement in risk-taking behavior was found on dietary and physical activity while the low level was noted for tobacco, alcohol and drug use and sexual behavior. However, adolescents have an average level of engagement to safety and precautions. Significant differences were found between emotional intelligence and engagement to risk-taking behavior and sex. Stress management came out as the sole predictor of the risk-taking behavior of adolescents. It is concluded that the respondents show satisfactory functioning in all the composite scales of emotional intelligence. They moderately involved in activities that would bring harms and dangers to their lives. Both sexes differ in levels of emotional intelligence and engagement to risk-taking behaviors. More stress can contribute to adolescent's risk-taking behaviors.

**KEYWORDS:** adolescence, emotional intelligence, risk-taking behavior, sex difference, stress management

# A Demographic Group Differential Study of Public School Teachers' Occupational Stress and Self-Efficacy

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## ABSTRACT

Teachers' self-efficacy or belief in her capability to guide their students to success is an essential factor that helps them survive the challenges of the teaching performance. However, the current work pressure brought about by the ever-changing educational landscape makes the teaching profession challenging, and to some, it is becoming stressful. In an effort to help teachers strengthen their level of self-efficacy and cope up with occupational stress through a professional development program, this study was carried out. It intends to determine the teachers' level of self-efficacy and occupational stress across demographics. It explored the degree of relationship between their demographic profile and their level of self-efficacy and occupational stress. The study made use of a non-experimental post-test only design with the aid of a survey instrument. A total of 275 public elementary school teachers from the District of Romblon took part in the study. The analysis of data using descriptive and nonparametric statistical tools yielded the following major findings: Younger teachers possess a higher level of perceived self-efficacy than those from middle and older age groups. Teachers with a long term length of service and who received no training in stress management tend to have a higher level of occupational anxiety. Their low or moderate level of occupational stress did not provide a substantial influence on their high-level self-efficacy. A weak or negligible correlation exists between their demographics and level of self-efficacy and between demographics and level of occupational stress.

**KEYWORDS:** occupational stress, public school teachers, self-efficacy