



# RESEARCH CONGRESS 2017

Book of Abstracts  
and Proceedings

"Moving forward  
on becoming a  
**World-Class University**"

April 19, 2017



[www.umindanao.edu.ph](http://www.umindanao.edu.ph)

## Message from the President



I wish to extend my warm welcome and greetings to the participants of the 2017 University of Mindanao Research Congress with the theme ‘*Moving forward on becoming a World-Class University*’ at the University of Mindanao, Matina, Davao City, Philippines.

Once again, the University of Mindanao is greatly honored and privileged to sponsor this prestigious scientific convention. I believe that we are in the right road towards attaining our goal of becoming a World-Class University. As we move forward in attaining this dream, we need to be fully-equipped with the necessary skills and capability in conducting research. RESEARCH is the forefront of becoming a world-class university. This convention is the perfect venue for M faculty and students to share their knowledge and research practices, and to learn from each other.

The various research outputs lined up for presentation is a manifestation of UM’s efforts in advancing itself in the field of research. I am hoping that these research endeavors of our faculty members and students will be used as references in addressing various issues that our society is facing today.

I thank the plenary speaker, Dr. Rec Eguia, for sharing his world-class expertise and experiences in research to the participants. I take cognizance also to our judges for spending their time in evaluating the research entries. I thank the leadership of the University of Mindanao Research and Publication Center for spearheading the Congress. To all participants, I wish you all the best. I am proud of all of you!

Mabuhay!

  
DR. GUILLERMO P. TORRES, JR.

President  
University of Mindanao, Davao City, Philippines



## Welcome Address

Good morning, ladies and gentlemen. Welcome to the 2017 UM Research Congress!

This is one event I look forward to attending each year. The holding of this activity has become a UM tradition, as I hoped and dreamt it would be since I was first assigned to head the Research and Publication Center. This is an excellent platform to bring together the research outputs of our faculty members and students and showcase their intelligence, hard work, discipline and creativity through their research projects.

Today’s annual research congress is held with the theme, “*Moving forward on becoming a World Class University*”. We have adopted this theme in support of the University President’s vision of UM WCU 2020. This is a true challenge to all of us especially the research department – to bring the quality of research to global standards.

To be a world class university, RPC needs to step up and continue to implement positive reforms in our research program. We intend to evaluate and upgrade our research agenda, establish discipline-based institutes that will concentrate on the accomplishment of this agenda, produce world-class researchers, and promote international research linkages. All of these we will do to continue to cultivate our research culture and bring to reality UM’s transition into a World-Class University.

So I would like to thank and congratulate the conference committee for yet another successful activity. I would also like to thank the entire faculty members and student participants; your presence in today’s activity inspires us to pursue our research and development plans with more vigor.

To the students, keep up the good work. The University of Mindanao looks at you for new vitality in our pursuit of quality education through significant and productive research. UM is counting on you to infuse into our institutional character the dynamic qualities of young researchers such as the enthusiasm to experiment with new ways and new things, the audacity to think big, and the infinite energy to pursue excellence.

Mabuhay tayong lahat! Maraming salamat po.

**Dr. Maria Linda B. Arquiza**  
AVP- Research and Publication Center  
University of Mindanao, Davao City, Philippines



## Keynote Abstract

### **Innoversity:** *The Triple Helix Model of Accelerating Innovation Initiative and Entrepreneurial Ecosystem of Research Universities*

Becoming one of the internationally recognized research universities is a formidable challenge in the Philippines. It requires a genuine institutional innovation in the transformation of labor, capital, and entrepreneurial assets of the university. The need to have a new DNA of innovation and entrepreneurship in the area of research, technology management, instruction, and technology transfer is of paramount important. A lesson learnt in the past is that it is not only enough to publish research; generate technology and applies for patent/license; and produce graduates. Thinking beyond the superficial performance measurement of the traditional universities is imperative in the quest of becoming the most admired higher learning institution for both local and global context. *“The current crisis in today’s universities is real, and much of it is of the universities own making. In the spirit of honoring tradition, universities hang on to past practices to the point of imperiling their futures”*<sup>1</sup>. The starting point is an honest assessment of university’s most valuable assets: its faculty and its physical campus. With these assets in mind, the question to ask is, *“How good are we really – not just relative to other institutions, but in terms of meeting the needs of the students, governments, industries, and other constituencies we serve – at doing the jobs of discovery, memory and mentoring?”*<sup>2</sup>

The triple helix model of supporting and accelerating innovation initiative and entrepreneurial ecosystem buys the idea of *“Making connections, encouraging conversations, and collaborating are essential elements of entrepreneurship, and increasingly, these activities have become critical to the work of a research university addressing the grand challenges facing the world. The good news is that there is seldom a shortage of proposals for the establishment of a multidisciplinary center or some other configuration the will readjust the traditional disciplines. The bad news is that many of these proposals are incomplete at best and wrongheaded at worst, and more often than not lack a plan of sustainability”*<sup>3</sup>.

Universities need to recognize the rationale of their existence. Its role in the production of knowledge that promotes social justice, economic equality, sustainable economic growth, and environmental integrity should be translated into observable performance indicators. These include the translation of research and development,

<sup>1</sup> Clayton M. Christensen and Henry J. Eyring, *The Innovative University: Changing the DNA of Higher Education from Inside Out*, Jossey Bass, Wiley, 2011

<sup>2</sup> Ibid

<sup>3</sup> Holden Thorp & Buck Goldstein, *Engines of Innovation- The Entrepreneurial University in the Twenty-First Century*, Second Edition, The University of North Carolina Press, 2010

and academic programs into actual public benefit (e.g., poverty reduction, employment generation), contribution to industry growth (e.g., based on the flagship programs of the university), and commercial impact (e.g., revenues from the technologies developed, startups and spinoffs).

The role of leadership and cultural shift is crucial in transforming the university as an entrepreneurial and technology-based entity. The Office of the Presidents and Vice Presidents shall be the frontline unit in establishing connection, conversation, and collaboration to external stakeholders with the end in view of forging partnership in launching startups and spinoffs, professional development using different modalities of program delivery, grants and gifts management, and, collaboration and institutional linkages. Faculty members and alumni also play a vital role as industry liaison officers of the university.

The crux of NNOVERSITY” is the establishment of a hub of technology transfer and academic entrepreneurship. This would require the following innovation initiatives:

1. Create a physical and intellectual space of convergence of the students, professors, alumni, venture capitalists and angel investors, entrepreneurs, and government policy makers and administrators;
2. Set-up a platform of entrepreneurial education and reflective practice to in-house faculty, students and external partners;
3. Incubate ideas through research and development process that will eventually develop into startups, business models, and spinoffs.
4. Facilitate and enhance partnerships and collaborations to government, corporations, international development partners, foundations, and, local and international investors.

INNOVERSITY shall serve as the nexus in developing the culture of innovation and entrepreneurship. It shall be the primary driver of startup formation, professional development, grants and gifts management, and, collaboration and institutional linkages.

To conclude, “invest on research to produce knowledge and this will generate innovation. Establish innovation orchard and this will generate wealth”.

**SGD. Dr. Rec Eguia**

Plenary Speaker

Humphrey Fellow

University of Southeastern Philippines

Mintal, Davao City Philippines

## Program at a Glance

TIME	ACTIVITIES
7:00-8:30 AM	Registration
8:30-8:45AM	Preliminaries (Opening prayer, National anthem, UM Hymn by UM Chorale)
8:45-9:00	Welcome Address <b>Dr. Maria Linda B. Arquiza</b> AVP- Research and Publication Center
9:01- 9:10	Message from the President <b>Prof. Iluminado Quinto Jr.</b> Dean, College of Architecture and Fine Arts
9:11-9:45	Plenary Speaker <b>Dr. Rec E. Eguia</b> Faculty & Humphrey Fellow University of Southeastern Philippines - Mintal
9:45- 10:00	Open forum
10:01 – 10:10	Intermission number (UM Makabayan Dance Troupe)
10:11-10:20	Reading of contest mechanics & presentation of judges
10:21-12:00	<b>Break-out sessions &amp; Judging of posters</b>  <b><i>Faculty research category</i></b>  <b><i>Sustainable economy &amp; institutional gains</i></b> (Business, governance, rule of law, enterprise development, etc.)  <b><i>Sustainable industries and technologies</i></b> (Green technology innovation, industrial applications, inventions)  <b><i>Sustainable environment &amp; health</i></b> (Natural science, health, and environment)  <b><i>Sustainable education &amp; institution</i></b> (Education, criminal justice, social capita)  <b><i>Poster presentation</i></b>
12:00-1:00	Lunch Break
1:30-3:30PM	Continuation of poster and oral presentation
3:31-4:30PM	Announcement of winners, giving of certificates  Closing remarks by <b>Dr. Adrian M. Tamayo</b> (UM Research Director)
HOST: Prof. Mary Jane Palicte	

## Table of Contents

	Page
Message from the President	2
Welcome Address	3
Keynote Abstract	4
Program at a glance	6
Table of Contents	7
Poster Presentation (Abstract of Entries)	8
Sustainable Economy & Gains of the University (Sub theme)	18
Sustainable Technologies & Industries (Sub theme)	23
Sustainable Education & Institutions (Sub theme)	28
Sustainable Environment & Health (Sub theme)	36
Faculty Research (Abstract of Entries)	41
Working Committee	48

**POSTER PRESENTATION**  
(Abstract of Entries)

## **Level of performance and job satisfaction of Davao Day Care workers, Davao City Philippines**

**Sittie Soraya M. Dataya, Ian Christian B. Tumampos and Arkin Jay S. Kumaladang**  
College of Arts and Sciences Education, University of Mindanao, Davao City Philippines

### **ABSTRACT**

The main objective of this study was to measure the level of performance of day care workers in Davao City as perceived by the parents and to measure also the level of job satisfaction of day care workers. Descriptive survey method was used in the study. Questionnaires were distributed to 100 parents of children in day care centers and 32 Davao day care workers, who were tapped as the research participants. The study showed very high level of performance of Davao day care workers which indicates that the performance is far above the expected level. On the other hand, there was a very high level of job satisfaction among Davao daycare workers which also indicates that the job satisfaction is far above the expected level.

**Keywords:** *Day Care Workers, Quantitative Study, Job Satisfaction, Performance, Social Work.*

## **Kakayahan sa pagbasa na may pang-unawa ng mga mag-aaral sa ikasampung taon ng Bato National High School, Bato, Santa Cruz, Davao del Sur**

**Romeo C. Cadiz, Jeanette C. Bacalso, Josielyn H. Gemoya,  
Jacqueline Salapuddin**

Department of Teacher Education, UM Digos College, Digos City, Philippines

### **ABSTRACT**

Ang mga mananaliksik ay naglalayong malaman at masukat ang antas ng pagbasa na may pang-unawa ng mga mag-aaral sa ikasampung taon sa paaralan ng Bato, National High School, Santa Cruz, Davao del Sur sa taong panuruan 2016-2017. Ang pananaliksik na ito ay nakabatay sa komparatibong dulog (*comparative approach*). Bilang pagpapalawak at pangangalap ng mga datos sa pag-aaral na ito, gumawa ng talatanungan ang mga mananaliksik na dumaan pa sa masusing pagsusuri ng mga balideytor upang sukatin ang bigat na nakakapit sa bawat aytem para sa pagpapatibay at pagkatapos, ipinasasagot ito sa mga mag-aaral. Sa pagkuha ng resulta, natuklasan ng mananaliksik na mataas ang antas ng pagbasa na may pang-unawa ng mga mag-aaral sa ikasampung taon sa paaralan ng Bato National High School. Bagamat mataas ang antas ng pagbasa na may pang-unawa ng mga mag-aaral, iminumungkahi ng mananaliksik na pag-iibayuhin pa ang pagbabasa at

paglalaanan ng panahon ang pagsisikap na matuto sa pagbabasa na may pang-unawa upang makamit ang tunay na pagkatuto.

**Keywords:** *Edukasyon, Kakayahan, Pagbasa, Pang-Unawa, Mag-Aaral, Isakasampung Taon, Komparatibong Dulog.*

## **Seaweed diseases in coastal area of Sitio Biao Barangay Cogon, Digos City Philippines**

**Mary Ann Rigos, Twinkle Sheen L. Fuentes, Loida Recorba, Garnette Mae Balacy**  
Department of Teacher Education, UM Digos College, Digos City, Philippines

### **ABSTRACT**

Seaweeds are indicator species. Because they grow only in ideal environmental conditions, their growth is indicative of pollution-free and ecologically-sound waters. This study was aimed to describe the physicochemical parameters as well as the diseases of *Eucheuma denticulatum* in the sea waters of Sitio Biao in Barangay Cogon, Digos City. The study collected described the different diseases of seaweed and the physicochemical parameters of sea waters. Findings revealed that there are three diseases and one parasite affecting the seaweed growth, namely: ice-ice disease, pitting, fungal infection and epiphytic parasite. Among the ten quadrats from the three transects, fungal infection was the most dominant. These diseases were the main reason why fluctuation on seaweed production occurs over time. The average water depth is 18 feet and the average temperature is at the ideal which is 30°C. The water substrate was 93.3% of corals and 6.7% was sea grass. Water turbidity is clear. It was found out that depth, salinity and temperature do not significantly relate to the occurrence of seaweed diseases.

**Keywords:** *Environmental, Physicochemical Parameters, Seaweed Diseases, Descriptive Correlation, Digos City.*

## **Academic challenges encountered by foreign students: Basis for learning support system**

**Ainie P. Bucarile, Rosie P. Lance, Jannin R. Talilis**

College of Teacher Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

This study investigated the academic challenges encountered by 12 foreign students enrolled in a Philippine private university. A survey questionnaire and face-to-face interviews revealed that foreign students encountered six most common academic challenges: language difficulties, relationship with teachers and students, presentation and reporting system, various homework, facilities and environment, and subject matter. Based from the data gathered, there are three factors that can contribute to such challenges: homesickness, climate, and educational system. The learning support systems that are suggested by the foreign students focused on improving the English language proficiency of the students, and extra courses for the foreign students with a short duration of 4-6 months that focused on speaking other languages such as Italian, Swedish and other languages. Recommendations based on the findings were discussed.

**Keywords:** *Academic Challenges, Foreign Student, Learning Support System.*

## **Academic stressors of pre-service teachers**

**Venus R. Jimenez, Reina Kimberly G. Solon, John Denver G. Surban**

College of Teacher Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

Academic stressors are reasons why college students, especially pre-service teachers, experience academic stress. This study investigated the academic stressors experienced by 577 pre-service teachers in a particular university in Davao City and their different stress level across year levels. By exploratory factor analysis, this study extracted five factors of academic stressors. Weak sense of self-efficacy constituted high level of stress among students. Findings show in this study that most of the students in the higher year levels are more stressful than those in the lower year levels.

**Keywords:** *Academic Stressors, Pre-Service Teachers, Factor Analysis.*

## Let's go hardcore on lesson review: An action research

**Anababes T. Catala, Raymart Villareal, Verlie Alcantara**

College of Teacher Education, University of Mindanao, Davao City, Philippines

### ABSTRACT

Linking students' previous knowledge upon introducing new topics is a vital ingredient in the teaching-learning process. To be able to utilize and link prior knowledge with the new learning, a daily lesson review is necessary since the way teachers prepare their students of the new topic may translate into a positive or a negative transfer. Addressing the gap between the past and new knowledge, this study utilized the daily lesson review in mathematics through routine drill and physical activities. Data were gathered from observing a Grade 7 Mathematics class and having the six struggling students in the same class go through in-depth interviews. Results conveyed a positive perception among interviewed students and that it helped those students in bridging what they knew and what they are supposed to know.

**Keywords:** *Education, Lesson Review, Action Research, Qualitative Research Study.*

## Self-efficacy, anxiety and students' performance in Math 501 course

**Razil Mahilum, Christopher Mercolita, Frejan Seguido**

College of Education, UM Panabo College, Panabo City, Philippines

### ABSTRACT

The study aimed to determine the difference and relationship between self-efficacy, anxiety and students' performance in Math 501 course among Math 501 students of UM Panabo College during second term, first semester of SY 2016-2017. The independent variables of the study were self-efficacy and anxiety. The indicators of self-efficacy were mastery experience, modeling, social persuasion, emotional and physiological states. The indicators of anxiety were dispositional, situational and environmental. On the other hand, the dependent variable of this study was students' performance in Math 501 course in which the indicator was the prelim exam percentage scores. The researchers used the non-experimental correlation method and the statistical tools used in the study were mean, t-test, Pearson product-moment correlation coefficient, analysis of variance (ANOVA) and coefficient of determination ( $r^2$ ). Findings of the study revealed that anxiety differed significantly at 0.05 level of significance when grouped according to program and students' performance. However, there was no significant relationship between the level of self-efficacy and students' performance in Math 501. On the contrary, math anxiety in terms of disposition, situation and environment affect the performance of the students in mathematics which therefore influenced only by 7%.

Further study using larger samples may be conducted to confirm the external validity of the finding of this study.

**Keywords:** *Mathematics Education, Self-Efficacy, Anxiety, Students' Performance, Math 501, Panabo City.*

## **College students' preference for a wellness spa service: A conjoint experiment**

**Jason Rey Domrigue, Giennese Elacion, Abduljihad Galmak,  
Russel Anthony Junsay**

College of Business Administration, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

The purpose of the study was to determine the preferences of college students for a wellness spa service in Davao City. It also determined the order of relative importance of its attribute together with the utility estimates of different levels to come up with the most preferable model of wellness spa service. Primary data were gathered through the use of 20 computer-generated hypothetical profiles of remittance service to 200 college students representing the colleges of University of Mindanao Bolton and Matina campuses. Results reveal that of the four attributes, price was the most important (30.299%) followed by ambiance of the spa (27.671%), staff (22.57%) and location (19.461%). As for the ideal model of a wellness spa service, college students prefer one that has traditional Filipino ambiance, near residential areas, having accommodating staff and spa rates ranging Php 600 to Php 1,200. Results can be used by the wellness industry particularly the spa companies to enhance their marketing strategies that is market-sensitive to Davao City student market.

**Keywords:** *Service Marketing, Wellness Spa, College Students, Conjoint Analysis, Davao City.*

## Health hazards of Barn Swallow (*Hirundo rustica*) in Rizal Avenue, Digos City Philippines

Frence Mae G. Babatuan, Rodel R. Sienes, John Carlo A. Gonzales,  
Garnette Mae Balacy

Department of Teacher Education, UM Digos College, Digos City, Philippines

### ABSTRACT

This study aims to identify the barn swallow assemblages that serve as indicators of the existence of disease occurrence in Rizal Avenue, Digos City. Particularly, the status of the birds in terms of morphometric measurements and estimated population were assessed. The bacteria found in barn swallow fecal matter and their possible health hazards were also identified in the study. This research employed a descriptive design in identifying the status and possible bacteria present in fecal matter. A total of 77 barn swallows were caught using mark-recapture in four identified areas. Morphometric measurements like bill length, bill depth, tarsus length, wing length, tail length and body weight were obtained. Fecal matter were also collected and sent to Regional Animal Disease Diagnostic Laboratory which provided the results for identifying the bacteria present through an API 20E kit. A description of the identified morphometric measures revealed that the barn swallows of Digos City conforms to the measurement done by Samuel (1971). A comparison of the morphometric measurement between male and female barn swallow shows no significant difference in their bill length, bill depth, tarsus length, and wing length and body weight. However, there is significant difference in tail length at 0.05 level of significance wherein males ( $\bar{x}=6.18$ ) have longer tails than females ( $\bar{x}=5.1$ ). Furthermore, there were 8 bacteria identified using the API 20E kit, which were all Gram negative and most of them are rod type bacteria.

**Keywords:** *Environmental Studies, Health Hazards, Barn Swallow, Quantitative-Descriptive, Digos City.*

## Fishing practices and catch-per-unit-effort in Malalag, Davao del Sur

Resty D. Diga, Donna Jane P. Pelonio, Marlo E. Pide, Melanie Pecision  
Department of Teacher Education, UM Digos College, Digos City, Philippines

### ABSTRACT

Malalag Bay coastal resources are varied and diverse, providing food and livelihood for almost the majority of the populace primarily through fisheries. Fisheries plays an important role to the Municipality of Malalag more specifically in the three barangays which are near coastal namely Barangay Baybay, Barangay Bagumbayan and Barangay Bulacan because it serves as the livelihoods of the people living around

Malalag Bay. This research paper presents an assessment of fishing practices in Malalag Bay Area and the catch-per-unit effort in each fishing practices. Five different types of fishing gears were identified. *Pamukot* (drift nets) has the highest number of respondents who preferred this fishing practice, followed by *pamasol* (hand lining), then *palangre* (long lining) and *tapay-tapay* (purse seine) with equal number of respondents as their preferred fishing practice lastly is the *pangundak* (lure fishing) with least number of respondents. Also, this research paper presents the CPUE of each practice and their implications and effects in sustaining fish harvest per practice. Standardizing the effort employed (e.g number of traps or duration of searching), which controls for the reduction in catch size that often results from subsequent efforts.

**Keywords:** *Fisheries, Fishing Practices, Catch-Per-Unit Effort, Qualitative Research, Davao Del Sur.*

## **Interlanguage idiomatics: The acquisition of English idioms by Filipino learners**

**Anthonette Joy G. Comendador, Randy C. Glimada, Rallane Lisz T. Salajog**  
College of Teacher Administration, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

This study examines the effect of the respondent's first language (L1) in acquiring and comprehending the idioms in their second language (L2). The respondents of this study were 41 students whose L2 is English. The questionnaire used was adapted from Banjar (2014) which tested the receptive and productive knowledge of 15 English idioms of three types: a) English idioms which have their exact counterpart in Filipino; b) English idioms which have their similar counterpart in Filipino; and c) English idioms which have no counterparts in Filipino. Results revealed that English idioms with direct equivalent in Filipino are the easiest to comprehend and produce. English idioms with similar and without counterparts in Filipino were the difficult to comprehend and produce, showing the highest interference of the respondents' L1. These findings suggest intuitive inferences for the teaching and learning of L2 idioms. Particularly, the L1 of the learners has an impact in acquisition of the target idioms. Thus, teachers and researchers must be aware of it. Hence, learning the idioms in a second language must be fix and systematic. Generally, the results and patterns of the previous research about the acquisition of target idioms and its part in the production and effective comprehension of the L2 are verified by this study.

**Keywords:** *Interlanguage Idiomatics, Filipino Idioms, English Idioms.*

## **Attributes of college students' choice for a tertiary hospital: A conjoint experiment**

**Madeliene Jill Muico, Bria Fe Pareja, Crystal Jean Ortiz, Veah Pernito, Germalyn Narin**

College of Business Administration, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

The purpose of the study was to determine the important attributes of a hospital as preferred by college students. The study likewise seeks to determine the most ideal combination of a hospital in the overall sample. The study utilized both key informant interviews to get the top attributes of a hospital, which became inputs to the conjoint experiment. Twenty (20) hypothetical designs (plancards) of a hospital were computer-generated using fractional-factorial orthogonal array and were rated by n=300 students of University of Mindanao Bolton and Matina campuses. Out of the 11 attributes identified in the key informant interviews, five were found to be most considered: location, room rate per night, services, doctors' availability, and facilities. Results reveal that of the five attributes, service was the most important (27.632%) followed by facilities (23.913%), doctors' availability (21.357%), room rate per night (14.215%) and location (12.883%). An ideal hospital for college students is one that is located along the highway, with facilities both for communicable and heart diseases, with a room rate of Php 2,000 to 3,000, with complete medical services for a tertiary hospital category, and with doctors working full-time. Results can be used by the medical industry and hospitals to enhance their marketing strategies to effectively capture their markets.

**Keywords:** *Marketing, Choice, Hospital, Conjoint Analysis, Davao City.*

## **Employability factors: A vantage view on restaurant management**

**Tayag, Canino, Calansingin**

College of Hospitality Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

This study aimed to extract employability factors in a vantage point of restaurant management. Using descriptive method of research with fifty (50) respondents and exploratory factor analysis (EFA) was used to analyze the data. Results showed that the extracted factors have no significant difference when respondents are grouped according to profile variables. This means that the managers in any type of restaurant have the same factors considered in view of employability. Given the diversity in today's labor market, findings from this study offer a promising view that conveys potential for impacting operations and thus affecting the factors of millions of foodservice workers. Restaurants owners should also conduct in-depth inquiry into the

employability factors that can help the restaurant industry and assess the value of corporate training and non-corporate training.

**Keywords:** *Employability, Restaurant Management, Factor Analysis, Davao City*

## **The use of manipulatives in learning balancing chemical equations: An action research study**

**Abegail Faye C. Alcala, Ryan S. Jereme, Jenel G. Ponce**

College of Teacher Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

Balancing chemical equations has been identified to be one of the difficult topics in chemistry due to its mathematical nature and it involves abstract concepts. Studies showed that the use of physical and virtual manipulatives is effective in teaching Mathematics; however, there are few related studies that utilized these manipulatives in Science instruction. Hence, the purpose of this study is to identify the ways in which manipulatives helped the students in learning balancing chemical equations and what type of manipulative they prefer more. In order to achieve these, an action research design was implemented. The gathered data from interviews and focused group discussions were analyzed through thematic analysis. There are strengths and weaknesses being identified with the utilization of both manipulatives. Physical manipulatives helped students in such a way that they were able to see the chemical equations from the atomic level to the concrete ones; however, students found that the use of these physical materials was time-consuming and that these materials were not durable. Students preferred more on using virtual manipulatives because it provided them immediate feedback from the software. Suggestions for the improvement of the design and implementations of both manipulatives were put forward.

**Keywords:** *Teaching Chemistry, Balancing Chemical Equations, Physical Manipulatives, Virtual Manipulatives, Action Research*

**SUSTAINABLE ECONOMY &  
GAINS OF UNIVERSITY**  
Sub-theme

## **Debt management strategies of micro-businesses in Davao City**

**Phoebelyn Acdog, Leonard Gil, Jamaliah Untoda**

College of Accounting Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

Debt is a powerful aid for businesses in times of need, but without proper management, it can also be destructive. Thus, the researchers are motivated to know the experiences as well as the strategies to provide caution and aid micro-business owners in this light. The researchers used phenomenological study design involving micro-business owners. The study found out that participants had two reasons for borrowing: for capitalization and for payment of other debts. Even though majority of participants find no problem in allocating the money borrowed, others cannot help but mix their business money with personal finances. Furthermore, the study showed that the participants found banking loan application a hassle. Participants' primary problem with borrowings was the high interest rates. Moreover, the participants also discussed their effective strategies such as monitoring debts, daily allocation of income for debt payments and making prompt payments to avoid additional penalties and surcharges. The ineffective strategies discussed were lump-sum payments, incurring debt as payment for other debts, and misuse of borrowed money. The study was able to implicate that one best way to manage debt is through proper debt education.

**Keywords:** *Accounting, Debt Management, Phenomenology, Davao City.*

## **Causality of macroeconomic factors on the movement of Financial (FIN) Index of the Philippine Stocks Exchange**

**Patrick Glenn Rollon, Precious Jane Peñas, Jeamuel Jan Concha**

Department of Business Administration Education, UM Digos College, Digos City, Philippines

### **ABSTRACT**

The purpose of this study was to determine the causative relationship between the macroeconomic activities towards the Financials index of the Philippines Stocks Exchange. A descriptive-causative type of research was used to describe the behavior of the macroeconomic variables, i.e. foreign direct investments, OFW remittances and peso-US dollar exchange rate, towards Financials (FIN) index of the Philippines for the period covering from January 2006 to October 2015. Bivariate Granger causality was used to determine the presence of causality between the variables. It was found out that the behavior on each graph of each variable shows volatility and vulnerability from

shocks caused by different factors in certain points of time. Results from bivariate estimations showed unidirectional relationship existing between OFW remittances and Financials (FIN) index of the Philippines. The same goes for the peso-US dollar exchange rate and Financials (FIN) index. On the other hand, the estimation showed a bidirectional relationship between foreign direct investment and the Financials (FIN) index having both of the variables significantly causing each other.

**Keywords:** *Macroeconomics, Causality, Financials Index, Philippine Stocks Exchange, Granger Causality.*

## **Readiness of Davaoño Certified Public Accountants for ASEAN integration**

**Kerr Bucarile, Daisy Flores, Ruffa Mae Sanchez**

College of Accounting Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

It has been recognized that accountants are vital towards nation building. Hence, they are basically required to be competent especially for the upcoming Association of Southeast Asian Nation (ASEAN) Integration in order to substantiate their readiness. The study aims to examine if there is a significant relationship between the competencies of Davaoño certified public accountants (CPAs) and their level of readiness towards ASEAN Integration. The level of competence and readiness required were based on the requirements mentioned in the Mutual Recognition Arrangement Framework and the International Education Standards of the IASB. Applying Pearson  $r$ , the results showed that individually there exist a significant relationship between their competency and their level of readiness. However, investigation revealed that the assessment of the relationship cannot be made collectively because of inconsistency on a per item basis as to whether it accepts or rejects the null hypothesis. Hence, various recommendations were presented such as provision of seminars, forums and national conventions that would increase their awareness as to ASEAN Integration particularly the mobility of CPAs as well as to enhance their analytical skills. Further, to make the CPA firms serve as the vehicle in promoting work practices that foster the highest quality of standards.

**Keywords:** *Accounting, Readiness, Certified Public Accountants, Asean Integration, Descriptive-Correlation, Davao City.*

## **Retention strategies and factors of longevity: A survey among accounting firms**

**Lynie Alcober, Mara Louie Del Prado, Icee Lace Lim**

College of Accounting Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

Retention strategies were tactics used by organizations in retaining employees. This study aimed to determine the accounting firm retention strategies and longevity factors of employees in Davao City. In line with this, 21 accounting firms in Davao City were selected to identify firm's retention strategies and 38 accounting employees to determine longevity factors. The method used in this study was descriptive-correlation. Data were gathered through survey questionnaires and data were analyzed using the mean and Pearson  $r$ . The findings showed no significant relationship between the firm retention strategies and longevity factors identified. Furthermore, this revealed that the retention strategy mostly utilized by accounting firms was internal advertising. This was associated to the longevity factor that sufficient knowledge of the nature and extent of the job will likely result to a decrease in turnover rate among employees. The result of this research was subject to certain limitations wherein other factors outside the scope of the study were not considered. Nevertheless, recommendations were evaluated and presented based on the findings.

**Keywords:** *Management, Employee Retention, Longevity, Correlation, Davao City.*

## **Internship performance evaluation and work performance appraisal**

**Judy Anne Austria, Ryan Victor Morales, Vanessa Yamyamin**

College of Criminal Justice Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

This study employed descriptive-correlation research design to determine the significant relationship between the internship performance evaluation and work performance appraisal. Respondents were chosen using purposive sampling design, involving  $n=11$  BSA graduates from internship batch second semester 2014 to 2015 who were currently working in Davao City. The instrument used was adopted from University of Mindanao Accountancy Internship Manual (AIM) of College of Accounting Education (CAE). Pearson product moment correlation coefficient was used to test the null hypothesis of the study. Findings revealed an overall outstanding and very satisfactory in their internship and work performance of the respondents, respectively. It has been manifested that on both indicators, the results showed the

same strength and weaknesses. The respondents excelled in Ability to Get Along with Others and Attitude towards Work, but performed the least in Quality of Work under Productivity. The study found out that there is no significant relationship between internship performance evaluation and work performance appraisal. Therefore, internship does not have a strong significance to the work performance because of the gravity of workload.

**Keywords:** *Education, Internship, Appraisal, Work Performance, Quantitative, Davao City.*

## **Factors of risk appetite affecting investment decision of potential investors: The case of University of Mindanao employees**

**Fara Princess Cervantes, Arnaldo Barcelona III, Al Moamar, Dilangalen**  
College of Accounting Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

This study was conducted to develop the constructs of the risk appetite of University of Mindanao employees. The mixed method was used involving 10 potential investors who have attended the FirstMetro Securities Seminar as key informants, by which responses were used as inputs for the scale development phase. In determining the factorability of the developed scale, a survey involving n=250 employees of the University of Mindanao was conducted. Exploratory factor analysis was the primary statistical tool used to extract the constructs of the risk appetite, following a principal component analysis to assess the number of components. The results revealed that the risk appetite is multidimensional and is a function of eight dimensions, namely (1) investor mindset, (2) investment literacy, (3) financial capability (4) right investment strategy, (5) rate of return on investment, (6) lack of investment knowledge, (7) market volatility, (8) intellectual capital. These eight dimensions are the areas that typify a model that would define the factor structure of the risk appetite and the factors that directly influence the investment decision of the employee. Using ordinal logit analysis, four of the extracted factors significantly predict the likelihood of investing in the stock market, whether positively or negatively. The factors that positively contribute to the likelihood of investment decision are investor mindset, right investment strategy and rate of return on investment while intellectual capital pulls down the chance of investing. Further validation of the resulting scale is encouraged to establish its psychometric properties.

**Keywords:** *Investment Decision, Potential Investors, Mixed Method Research, Exploratory Factor Analysis, Ordinal Logit Analysis, Davao City.*

**SUSTAINABLE TECHNOLOGIES &  
INDUSTRIES**  
Sub-theme

## **Development of an auto following carrier robot: A Bluetooth application**

**Michelle Anne Good, Agnes Pagantian, Romel Rosario, Angela Estella**  
College of Engineering Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

One common activity that requires time and effort is carrying objects from one place to another. People tend to hire help for assistance in completing this task. With the aid of the auto-following carrier robot, people do not need to hire other people and can even carry multiple objects at once. The aim is to make people's lives more convenient so that they can keep up with the world's constant changes. Hence, this project's goal is also to offer assistance to people who need immediate help in carrying heavy objects in places. The study targets the creation of a control system of an auto-following robot that is accessible via Bluetooth connection and Android application. With this, manpower may not be needed as much as it is anymore and can do more work faster. This will be a great help to people especially that almost all own an Android smartphone which is necessary to connect to the robot. With just a few clicks, a robot follows the user while carrying the belongings.

**Keywords:** *Robotics, Auto Following, Bluetooth, Control System, Ultrasonic.*

## **PiCloud: Databank information system with decision support system for farmers' registry in Region XI with in-house cloud storage using Raspberry Pi**

**Shaira Rose Barroga, Zerxa Aeon Mamac, Melvin Soriano, Meljohn Aborde**  
College of Computing Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

The agricultural sector of the Philippines is in the stage of modernizing, and is starting to adopt modern ideas and methods. Farming in the Philippines has long started the modernization which its use of various machines to speed up farming processes. However, when it comes to modernization in managing the farmers' records, the country has not fully adopted modern techniques. The dilemma is the same especially in provinces like the Davao Region. In the Department of Agriculture Region XI, gathering of the farmers' records takes half a year which makes it time-consuming. After gathering of data, the farmers' data collected needs to be encoded which also take half a year. Annual reports can take at least two years to finish. With this, the Philippine government is having difficulty in assisting farmers. The PiCloud will give solution to this dilemma through having a mobile application that can be used in gathering farmers' data and a desktop application that can be used to view reports and projections. The PiCloud ensures the improvement in speed and productivity by providing a more modernized technique on collecting and analyzing farmers' data.

**Keywords:** *Computing, Databank Information System, Decision Support System, Cloud Storage, Raspberry Pi, Davao City.*

## **Minimizing traffic flow of Agdao intersection: Finding the shortest path using graph theory**

**Shiela Adalim, Cristine Dawa, Leah Mae Pelaez**

College of Arts and Sciences Education, University of Mindanao, Davao City,  
Philippines

### **ABSTRACT**

Due to the rapid development of urban transportation systems and the exponential increase of traffic volumes in Davao City, major intersections such as Agdao Proper play a key role of the vehicle movement and the operating capacity of the entire road network. The exposure of road congestions and other related traffic problems call for the design and efficient optimization methods. In this paper, the five-legged intersection of Agdao is shown as a graphical representation with indicated volumes and directions. A linear programming model is also utilized at an intersection to minimize the existing traffic flow within a given period of time. This leads further to the suggestion of rerouting and diverting the private vehicles where alternative routes are being determined. The application of graph theory is employed in which a genetic algorithm (The Floyd Algorithm) is used to calculate the all-to-all shortest routes for the Agdao road network.

**Keywords:** *Traffic Flow, Shortest Path, Graph Theory, Davao City.*

## **911Locator: A mobile application for monitoring the Central 911 service responder using Geolocation API and Cordova with Ionic framework**

**Raymund Matol, Noralyn Lismoras, Vincent Brenold Giron, Silvio Anzola**

College of Computing Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

This study was conducted to develop the 911Locator, a mobile application for monitoring the Central 911 service responder using Geolocation API and Cordova with Ionic framework. Results revealed in the web browser testing, the system will run efficiently only in Google Chrome. It is also compatible and running in other web browsers such Mozilla Firefox, Microsoft Edge and Opera with its current versions but a problem was encountered mainly in the GUI. The effects and some designs of the

web app are not supported. For the resolution testing, the system will run in any resolution. For the platform testing, the mobile application is not compatible with a Ginger Bread 2.3 with a RAM of 512 MB. The web application runs and displays on Google Chrome, Mozilla Firefox and Microsoft Edge browsers. The mobile application also run and display on Samsung Galaxy J7 Prime, Oppo A37, and ASUS Zenphone 5. The web application is accurate and fully functional in Google Chrome. In terms of the quality, the mobile application is user-friendly. Both mobile and web application needs fast internet connection especially in requesting a responder to the web app and getting the details of the caller. The system is highly integrated with GPS which will execute the responder monitoring effectively and efficiently, making it user-friendly and easy to navigate.

**Keywords:** *Mobile Application, Central 911 Service Provider, Geolocation Api, Cordova With Ionic Framework, Davao City.*

## **Virtual reality paragliding game environment for Oculus Rift, Android, and iOS platform using Unity 5**

**Rhian Kenneth Martinez, Cristy Jane Relatado, Silvio Anzola**

College of Computing Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

One of the most essential parts of a game application other than the gameplay is its environment. A game environment is where the action takes place and where the user plays the game. Currently, a game environment has transitioned into virtual reality, a computer generated game environment, which allows the user or player navigate inside as if he is a part of it. Hence, this paper documents the development of a virtual reality game environment with paragliding experience feature using Unity 5 as the game engine, Perlin Noise and Voronoi Diagram for creating and remodelling of the environment's terrain. In addition, the output of the study is compatible in three different platforms: Android, iOS, and desktop for Oculus Rift. As a collaborative project between UM-CCE and its industry partner, Maata Games, the researchers have followed the latter's specifications in the course of the development of the VR game environment. Aside from that, the researchers have also provided an additional coin collection gameplay.

**Keywords:** *Game Development, Virtual Reality Environment, Paragliding, Unity 5.*

## **Squash (*Cucurbita maxima*): An experimental replacement growth medium for economically-important fungal hyphae**

**Neil Anthony Jamili, Jesson Cinto, Rhona Lynne Bansas**

College of Engineering Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

This study is an experimental testing of developing Squash (*Cucurbita maxima*) as replacement growth medium for economically important fungi such as *Metharizium*, *Aspergillus* and *Saccharomyces* species. An aseptic technique of cultivation was observed in all aspects of the experiment. Growth of colony forming units is the measure of success of the devised medium. All fungi culture exhibited excellent growth under the experimental squash dextrose agar medium. Statistical analysis was then utilized to compare the potential significant difference of the experimental medium and that of the control medium (nutrient agar). Test of normality of the results using Shapiro-Wilk statistics at 0.005 level of significance showed abnormality of the data from the results subjecting the data to be interpreted using Kolmogorov-Smirnov Z to determine the significant difference of the experimental medium and that of the control medium. The test exhibited no statistical difference on both samples as culture media for all fungi. Standard deviations of the experimental samples showed lesser deviation to that of the control media. In addition, the researchers are on continuum to improve the quality of the experimental medium for commercialization.

**Keywords:** *Biotechnology, Aseptic Culture, Commercialization, Dextrose Agar, Kolmogorov-Smirnov Z, Shapiro-Wilk test.*

**SUSTAINABLE EDUCATION  
& INSTITUTION**  
Sub-theme

## Solution to a Bernoulli equation by variable transformation

**Kathleen Educalan, Shiela Mae Mahinay, Leah Mangubat**

College of Arts and Sciences Education, University of Mindanao, Davao City, Philippines

### ABSTRACT

Nonlinear differential equations may not appear to be in a solvable form. However, an appropriate substitution can make these equations be reduced to linear or separable forms. This study deals with Bernoulli equation  $y' = P(x)y^\alpha - Q(x)y$  where  $\alpha \in R$ , which aims to generate the general solution using variable transformations. Notice that if  $\alpha = 0$  or  $\alpha = 1$ , then the differential equation is in linear or separable form. In particular, this paper introduces three ways of obtaining general solution to a Bernoulli equation. The first two ways are applicable if  $\alpha = 2$ , wherein the variable transformations to be used are  $y = \frac{P(x)}{u}$  and  $y = \frac{\delta(x)}{u}$ . Since not all Bernoulli equations are quadratic, we use the variable transformation  $y = \delta(x)v$  for all  $\alpha \in R$ . The transformation  $y = \frac{P(x)}{u}$  transforms the differential equation  $y' = P(x)y^2 - Q(x)y$  to its linear differential form  $u' - uF(x) = G(x)$  and the transformation  $y = \frac{\delta(x)}{u}$  reduces the differential equation  $y' = P(x)y^2 - Q(x)y$  to the differential equation  $u' = -P(x)\delta(x)$ . On the other hand, the transformation  $y = \delta(x)v$  reduces the differential equation  $y' = P(x)y^\alpha - Q(x)y$  to the equation  $v = -\alpha \sqrt[\alpha]{\int P(x)\mu(x)^{\alpha-1} dx} - \alpha + 1$ .

**Keywords:** Bernoulli Equation, Technique, Transformation.

## “Libro”: An advocacy short film on peace in Mindanao

**Maqmuouddin Banto, Phia Joy Igar, Karl Matty Vien Pacudan**

College of Arts and Sciences Education, University of Mindanao, Davao City, Philippines

### ABSTRACT

This research was made in the creative works format using multi-media techniques to produce the film “Libro: An Advocacy Short Film on Peace in Mindanao”, whose advocacy is to foster peace. The study aimed to highlight stories about peace in Mindanao society, using film as a catalyst of change. The film advocacy theory, along with the concept of conflict sensitive journalism, was the basis for establishing the film. Galtung’s Triangle of Violence model, further developed by Filipino journalist Karlon

Rama, was emphasized. The story revolved around two young Maguindawons who observe the effects of *rido*, or clan wars, on their society in general and in their lives in particular. They resolve to move on with their lives notwithstanding that a number of their relatives have been killed in revenge over land struggles. Thus, filmmaking should be strengthened to advocate and bring about societal change. Film conveys subtle themes and the producers should not disregard the viewers' capacity to learn from its messages.

**Keywords:** *Film, Advocacy Film, Peace, Film Production, Mindanao.*

## **Responsabling Masa: Seeing insurgency in the lens of the left**

**Benjamin Babante, Adonis Santander**

College of Arts and Sciences Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

Insurgency is a systematized effort meant to remove an established government by the use of rebellion; a battle between a no ruling party and the ruling elites of which Philippines has been affected by. Hence, the purpose of this research was to know the story of Responsabling Masa in connection to the existence of insurgency, how they organize the cluster of masses in the barangay level and how they were convinced to join the underground movement. This study was conducted through interviews to the active NPA members of CPP-NPA subregional committee, Responsabling Masa, and a Political Science instructor, to evaluate the importance of Responsabling Masa to the insurgents. This study described the disappointment of the people in the government because of social injustice. The theory implied that people's trust of government has been lessened because of the latter's incapability to answer citizens' appeal and offer solutions to society's expanded problems. The results of this study will help LGUs in shaping the succeeding campaigns and programs of the government toward eliminating the root causes of socio-political problems. This may also give military personnel and strategic planners of the government an idea where they may want to improve with their campaign plan in the local environment

**Keywords:** *Political Science, Responsabling Masa, Social Injustice, Insurgency, Davao Region.*

## **Second language learning of the foreign students in UM Institute of Languages**

**Vergelia Cabila, Narez Mae Mongcal, Karen Joyce Niere**

College of Arts and Sciences Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

This study was conducted to recognize the performance level, learning strategies and experiences of the selected foreign students enrolled in Filipino subject at the UM Institute of Languages in learning their second language. Quantitative and Qualitative Case Study was utilized with six participants involved. Further, data were gathered from the University's Records and Admission Center and individual interviews. It was found out that friends, faculty members, the personnel of the University of Mindanao and the special class on Filipino subject in the curriculum of the respondents were considered as aspects in the second language learning of the foreign students. It was revealed that there is a need for an extensive learning session for the foreign students to completely equip them with the desired fluency and proficiency in their second language which is Filipino.

**Keywords:** *Filipino Subject, Foreign Students, Performance Level, Experiences, Learning Styles, Philippines.*

## **Lived experiences of teachers handling children with autism spectrum disorder in a self-contained classroom**

**Eldrin Jan Decatoria, Marlyn Joyce Espe, Mildred Lachica**

College of Teacher Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

The purpose of this study is to investigate Special Education teachers' experiences in handling children with autism spectrum disorder in order to explicate a description of the phenomenon of supporting children with autism. It aims to explore teachers' experiences while it is being lived out in school and sought to provide reflection and support for future special educators. This research study used a case study method to describe the experiences of Special Education teachers handling children with autism spectrum disorder. The researchers conducted interviews to two Special Education teachers of Davao City Special School (SPED) using questionnaires patterned from the method of Bourke (2007). Trustworthiness of the data was ensured through member checking. The privacy and confidentiality of the participants' answers were assured informing the participants how the data were to be used and stored securely. Implications of the study were discussed.

**Keywords:** *Autism Spectrum Disorder, Self-Contained Classroom, Lived Experiences, Davao City.*

## **The use of Siwl strategy to improve the performance of Grade 8 students in factoring polynomials by a common monomial: An action research**

**Shamile Josephine Arobo, Mariel Pearl Serafica, Bethel Pacay**  
College of Teacher Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

The aim of this study is to find out whether the use of icons can improve the students' performance, specifically in factoring polynomials by a common monomial. The researchers used a strategy they call Siwl or Substitute it with Icons. In this strategy, the respondents will substitute icons to a polynomial expression and then solve it. The study was conducted from August to September 2016 in the University of Mindanao Basic Education Department, with respondents coming from the Grade 8. Among the 45 Grade 8 students in the class, 10 were purposively chosen to participate in this study. There were 2 high performing students, 3 average performing students and 5 low performing students. Results from gap analysis and problem tree analysis conducted are presented in the first part of this study. It shows that the main problem that the students are facing is their low scores in examinations and tests. With the specific allowed time, the study focuses on the improvement of the students' performance in factoring polynomials, since the improvement of this is the improvement of the main problem as well.

**Keywords:** *Mathematics Education, Siwi Strategy, Factoring Polynomials, Descriptive Research, Davao City.*

## **Using flipped classroom in ameliorating students' low interest in Mathematics: An action research**

**Ronnan Patrick John Quintano, Karen Grace Villarba, Cindy Deguito**  
College of Teacher Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

One of the problems encountered in a senior high class particularly in one of the universities here in Davao City is their low interest in Mathematics. The purpose of this study is to take an action in order to help the students ameliorate their interest in the said subject. To do so, the researchers decided to flip the classroom. By conducting an action research, we found out that this approach gave students a chance to share their ideas inside the classroom, assess and help their peers and become active members of the learning process. In addition, we also found out that the students are more likely engaged to games or activities in line with the topic. However, the strategy

was implemented only for three (3) days. Hence, based on the feedbacks, we improved the approach by localizing the lecture videos presented to the students.

**Keywords:** *Mathematics, Flipped Classroom, Interest In Mathematics, Action Research, Davao City.*

## **Kudkud dire, kudkud didto: The experiences of make-up artists**

**Rolando Acosta, Alyssa Mae Hinaut, Jackelyn Sereno**

College of Teacher Education, UM Panabo College, Panabo City, Philippines

### **ABSTRACT**

The main purpose of this study is to determine the negative and positive experiences of makeup artists of both the living and the dead people. This is a qualitative study using observation, in-depth interview and focus group discussion. The researchers found out that both make-up artists of the living and the dead experienced hardships and worthwhile experiences. It was then concluded that the negative and positive experiences of the make-up artists are counted to be a motivational tool towards success and betterment to their field of expertise.

**Keywords:** *Experiences, Make-Up Artists, Phenomenology, Panabo City.*

## **Learner-Centered Approach: Its effect on the oral fluency of the students in UM Panabo City Philippines**

**Melody Joyce S. Maasin**

English Language Program, Department of Arts and Sciences Education, UM Panabo College, Panabo, Davao del Norte Philippines

### **ABSTRACT**

The purpose of the study was to determine the effect of the learner-centered approaches to the oral fluency of the second year students in English 202-Communicative English. The study employed the quasi-experimental method using the pre-test and post-test experimental group design. Two groups of students were utilized as the experimental groups of the study. The findings of the study revealed that both groups acquired the same level of oral fluency before the intervention but acquired different levels of fluency after. Based on the result, the conclusion was that the level of speaking fluency of the participants exposed to Cooperative learning improved significantly higher than those exposed to Task-based teaching. An

experimental study that would require longer time of treatment employing randomization could be considered to further investigate the possible results.

**Keywords:** *Language Teaching, Speaking fluency, Quasi-experimental, Davao*

## **Epic journey of Tudbulul**

**Angelo Florante Nur Valente**

College of Architecture and Fine Arts Education, University of Mindanao, Davao City,  
Philippines

### **ABSTRACT**

The “heroic journey of Tudbulul” is a portrayal of the T’boli’s cultural significance in South Cotabato through a phenomenological study. There are eight episodes in this heroic story, and the research is particularly focused on its first episode – the “Sengulang Tutul” (Tudbulul Story). The story of Tudbulul originated in the provinces of South Cotabato and Sarangani in Mindanao. It was discovered in 1985 by Virginia Buhisan and it was explored and elaborated further by Damiana Eugenio in 2001 which paved way to more references on the story. Since then, the story of Tudbulul evolved to eight episodes. The phenomenological study introduced Tudbulul as a new and unfamiliar epic in Philippine literature. This research focused on the engagement of contemporary Philippine literature and art that will constitute as another learning instrument of Philippine culture. The result of this study will serve as another source of information about our heritage and will act as a reference for future researchers.

**Keywords:** *Fine Arts, Tudbulul, Phenomenological Study, T’boli, South Cotabato.*

## **Lifestyles of Criminology students of the University of Mindanao**

**Jonathan E. Deocampo, Mark R. Gracia, Princess Anne T. Nani**

College of Criminal Justice Education, University of Mindanao, Davao City Philippines

### **ABSTRACT**

This study was conducted to determine the lifestyles of the Criminology students of the University of Mindanao and to also determine how they able to balance their lifestyle in different aspects. A researcher-made questionnaire was formulated distributed to  $n=318$  Criminology students divided equally to every year level. Results shows that the overall lifestyle of Criminology students in the University of Mindanao is high, which is often expressed and justified in what they are doing in terms of different manners. The lifestyle construct having a very high rating and always fulfilled by

students is the academic lifestyle, while the least-subscribed constructs are personal lifestyle and social lifestyle.

**Keywords:** *Lifestyle, Criminology Students, University Of Mindanao.*

## **The effect of speaking activities to speaking skills among second year BSED-English students**

**Yaosha M. Moya, Hydie L. Intong, Cleo D. Martinez**

College of Teachers Education, University of Mindanao, Panabo Branch,  
Panabo City, Philippines

### **ABSTRACT**

Students are generally weak in English language and it is really evident especially for the countries that English is not spoken as their mother tongue. In this study, the efficiency of different speaking activities to speaking skills is tested. This study makes use of experimental approach, particularly the one group pre-test – post-test design. The group was treated with speaking activities after the pre-test and then post-test was conducted thereafter. It was found out that the speaking skills of the students had an improvement after the treatment. There is a significant difference in the scores of the students in their pre-test and post-test. The level of speaking skills of the students becomes high after the treatment. In this study, we recommend that the school administration should develop an enhancement program for speaking skills.

**Keywords:** *Oral Communication, Speaking Activities, Experimental, Panabo*

**SUSTAINABLE ENVIRONMENT  
& HEALTH**  
Sub-theme

## Heavy metals concentration of Pulabato, Altayan and Taplan rivers at Tampakan, South Cotabato, Philippines

**Chelsy Annica Vilanueva, Eddy Mae Gonzales, Arcel Lagsub**

College of Arts and Sciences Education, University of Mindanao, Davao City, Philippines

### ABSTRACT

Water is essential to human for survival and various industrial, domestic, and agricultural uses. However, one of the environmental problems arising today is the need of clean water. The objective of this study is to assess the extent of heavy metal contamination of the rivers near the Copper-Gold mining project of Sagittarius Mines Inc. in Tampakan, South Cotabato, which includes Pulabato River, Altayan River, and Taplan River, for the representation of the upstream, middle, and downstream system of the river body, and to differentiate the heavy metal concentration during wet and dry seasons. Fifteen water samples were employed with grab sampling method and subjected to analysis for heavy metals specifically Arsenic (As), Cadmium (Cd), Cyanide (Cn), Lead (Pb), and Mercury (Hg). The result was compared to three water quality guidelines: EMB-DENR DAO 2016-08, US EPA Water Quality Criteria, and Australia and New Zealand Water Quality Standards. Based on the results gathered, the Pulabato River consistently exceeded the given standards among the river stations. Almost half of the 15 samples were above the standard criteria during wet season and 4 out of 15 for dry season. The cyanide parameter was the only heavy metal that has no difference on the result and within the water quality standards. Generally, the heavy metal parameters have no significant difference during wet and dry seasons and between the river stations; therefore, the null hypothesis was accepted. However, Arsenic was found to be significantly different from each river stations. The activities of the area have greatly affected the natural form of the environment, vegetation, alteration of river routes and the quality of the rivers of Tampakan. Frequent rainfall from the upstream of Barangay Pulabato caused the contaminated water course through the downstream area which affected the beneficial uses of the water and may also cause health hazards.

**Keywords:** *Water Quality, Heavy Metal Concentration, South Cotabato.*

## Phytochemical screening and larvicidal efficacy of *Eupatorium capillifolium* (Dog-fennel) against *Aedes aegypti* and *Culex quinquefasciatus* (Diptera: Culicidae)

Reverie R. Barrios, Glaiza Sofia Garcia

College of Arts and Sciences Education, University of Mindanao, Davao City, Philippines

### ABSTRACT

Vector-borne diseases are still proliferating because of the re-emergence of diseases transmitted by mosquitoes. The objective of this paper is to evaluate the phytochemical screening and the larvicidal efficacy of the crude extract of *Eupatorium capillifolium* (Dog-fennel) leaves on the larvae of *Aedes aegypti* and *Culex quinquefasciatus*. These plant species is non-native in the Philippines and widely distributed in the country. Phytochemical constituents of the plant extract was identify using simple qualitative methods and biological tests were realized according to a methodology inspired from standard World Health Organization protocol with slight modification. The study was conducted in the Microbiology Laboratory of the University of Mindanao, Matina, Davao City. Phytochemical screening test indicates the presence of tannins, alkaloids, tri-terpenoids, coumarins, saponins, steroid and phytosteroid, flavanones, flavones, carbohydrates and amino acids. A total of 1,200 3<sup>rd</sup> and 4<sup>th</sup> instar larvae of *Aedes aegypti* and *Culex quinquefasciatus* were exposed to different concentration ranging from 25%-100% of both control (Acetone ) and treatment (plant extract) .The Larval mortality was observed after 1, 2,6,12,and 24 hours exposure. One way Analysis of variance was use in analyzing the data. The highest susceptibility and toxicity with 99% significant was recorded in 1 hour exposure in 50%, 75% and 100% concentration of *Eupatorium capillifolium* leaf extract. The larvae of *Aedes aegypti*, revealed 97.67% mortality rate in the plant extract, while only 50.07 % in control, while there are 98.75% mortality rate in *Culex quinquefasciatus* was observed in the extract and only 40.33% in control. This indicates that crude leaf extract of *Eupatorium capillifolium* is very effective in killing *Aedes aegypti* and *Culex quinquefasciatus* mosquitoes. This finding may lead to new low cost alternative, environmentally friendly method for mosquito control programs. To our knowledge, this is the first report on larvicidal bioefficacy of *Eupatorium capillifolium* plant.

**Keywords:** *Aedes aegypti*, *Culex quinquefasciatus*, *Eupatorium capillifolium* Larvicidal Efficacy, Davao City.

## **Delineating the heat islands in Digos City: A factor in urban development**

**Adelaine Marie Dullin, Lowella Dumaguít, Daylyn G. Yting, Jan Ronan Cortes**  
Teacher Education Department, UM Digos College, Digos City, Philippines

### **ABSTRACT**

The development of urbanization in Digos City is at its peak. This rapid transformation of urban areas leads to the study of urban heat island (UHI) formation in the city. In detecting this UHI, images obtained from the remote sensors were used to determine heat islands in Digos City. To identify the land cover of this UHI, the Landsat Enhanced Thematic Mapper is used. Upon this process, four major types of land cover were determined: urban, agriculture, vegetation and barren areas. UHI was evident and can be detected by fractional vegetation cover. This vegetation cover was derived by computing the NDVI from the images. The analysis of the difference of heat island areas between 2001 and 2007 was computed by subtraction method and verified by ground truthing. With these processes, it is evident that there is heat island formation in Digos City.

**Keywords:** *Environmental Sciences, Urbanization, Heat Island, Remote Sensors, Landsat Enhanced Thematic Mapper, Ndvi, Digos City.*

## **Physico-chemical analysis and preliminary list of mycorrhizae in Mt. Hamiguitan Range Wildlife Sanctuary, San Isidro, Davao Oriental, Philippines**

**Jessa Mae Balbanida, Ian Dablo, Dexter Patalita**  
College of Arts and Sciences Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

A survey on the mycorrhizal associations in Mt. Hamiguitan Range Wildlife Sanctuary, San Isidro, Davao Oriental, Philippines was conducted. Five (5) 20m x 20m quadrant plots were established as sampling sites, Site 1 agro-ecosystem site; Site 2 and 5 were situated on dipterocarp forests; Sites 3 and 4 were established in montane forest vegetation. The population density and species richness in these sampling sites were recorded, AMF spore density collected from rhizosphere soil was quantified, potential EMF fruiting bodies within the plots were collected and photo-documented. Eleven plant species were collected to assess mycorrhizal population through spore density and root colonization. Results show that the homogenized samples of Site 3 and 4 harbored the highest number of spores (96 spores/15g of soil) and the highest diversity of AMF with 18 recognized spores, Site 1, however, has the record of the

lowest spore density (32 spores/15g of soil, with 7 recognized spores). Among the 11 plant species, *Shorea astylosa*, harbored the highest spore density (68 spores/10g of soil, with five recognized spore), AMF root colonization was highest in *Callophylum blancoi* with (33.33%), 43 potential fruiting bodies were photo-documented across the three vegetation types: agro-ecosystem (14%), dipterocarp forest (53%) and montane forest (33%). The researchers highly suggest conducting further studies specifically for the identification of these AMF and EMF species. It is also recommended to increase the sampling sites, specifically the vegetation type covered.

**Keywords:** *Biodiversity, Mycorrhizae, Quadrant, Mt. Hamiguitan Range Wildlife Sanctuary.*

## Land use change model in Sta. Cruz, Davao del Sur

**Thonver Sampaga, April Grace Vicho, Rolan Camayudo, Xavier Fuentes**  
Teacher Education Department, UM Digos College, Digos City, Philippines

### ABSTRACT

Land use planning is required to provide a basis for the sustainable development of land resources in a region. Sta. Cruz, Davao del Sur is a first class municipality which is in the process of land development. The information that was gathered in this study will be significant for Local Government Unit (LGU) of the municipality in completing its Comprehensive Land Use Planning (CLUP). This study aims to quantify the amount of land use change and its drivers or factors that contributes to the modification of land in the municipality. There were two set of data, the first set was served as the basis to finalize the two maps (2003 & 2013). The second set was utilized to quantify the land use change and identify the drivers. The results revealed that secondary forest has the highest net gain in terms of land area (hectare) that covered 1050 ha which was mainly contributed by sugarcane/corn field/grassland with 1161 ha which later led to have the highest net loss. Other land cover such as primary forest, coconut, mango, industrial and built-up areas have a net gain below 105 ha while banana has a net loss of 385 ha. Distance from disturbance, distance from river, distance from road, elevation, and slope were identified as the significant drivers of change measured by its Cramer's V and p-value.

**Keywords:** *Environment, Land Use, modeler, GIS, Sta. Cruz, Davao del Sur.*

**FACULTY RESEARCH**  
Abstract of Entries

## **Employee engagement and organizational commitment in Holy Cross of Davao College, Davao City**

**Junmar E. Pag-ong, RN**

Professional Schools, University of Mindanao, Davao Philippines

### **ABSTRACT**

This study is intended to determine the significant relationship between employee engagement and organizational commitment which importantly domain the employee engagement that best predicts the commitment of employees at all levels in Holy Cross of Davao College (HCDC) in Davao City. In addition, the study described the level of employee engagement and organizational commitment with their corresponding indicators. A total of 121 Holy Cross of Davao College Employees (College Department, located at Sta. Ana Avenue and High school branch, located at Bajada) in Davao City served as respondents. Using Pearson product moment correlation and regression analysis as inferential statistical tools, the study revealed an overall very high level of employee engagement as well as the level of commitment in whole organizations of HCDC employees. An overall r-value of 0.581 with  $p < 0.05$  implies all the indicators of employee engagement of HCDC employees showed significant relationship with their commitment in organization. It can be concluded that among the indicators of employee engagement, managing work /life balance and career development significantly predict the organizational commitment of HCDC employees.

**Keywords:** *Business Administration, Employee Engagement, Organizational Commitment, Davao City.*

## **Learner-Centered approach: Its effect on the oral fluency of the students**

**Melody Joyce Maasin**

College of Teacher Education, UM Panabo College, Panabo City, Philippines

### **ABSTRACT**

The purpose of the study was to determine the effect of the learner-centered approaches to the oral fluency of the second year students in English 202-Communicative English. The study employed the quasi-experimental method using the pre-test and post-test experimental group design. Two groups of students were utilized as the experimental groups of the study. The findings of the study revealed that both groups acquired the same level of oral fluency before the intervention but

acquired different levels of fluency after. Based on the result, the conclusion was that the level of speaking fluency of the participants exposed to Cooperative learning improved significantly higher than those exposed to Task-based teaching. An experimental study that would require longer time of treatment employing randomization could be considered to further investigate the possible results.

**Keywords:** *Language Teaching, Speaking Fluency, Quasi-Experimental, Davao.*

## **Educational field trip as complementary pedagogical approach in teaching Political Science subjects: An action research**

**Gerlieta Ruiz and Bonnie Hamilton Rabaca**

College of Arts and Sciences Education, University of Mindanao, Davao City, Philippines

### **ABSTRACT**

This study aims to determine the effectiveness of a particular learning strategy-field trip in relation to major subject in political science discipline. This principle motivated teachers in political science to employ field trips as pedagogical approach in teaching major subjects. An action research was also conducted on this particular teaching strategy in order to reveal the insights of the political science students and the professors on field trip activities as a complementary teaching strategy besides the classroom setting, and to extract specific suggestions to improve the activity which possibly will result in the development of a new innovation to field trip activities that may be undertaken in the future. Twelve students who were enrolled in PS 41 (Local Government in the Philippines) and PS 32 (International Relations) subjects during the 2nd term of the 2nd semester, SY 2013-2014 were recruited to participate in the study. Results revealed that field trips enhanced/complemented the students' understanding of the concepts they learned inside the classroom; field trips unfolded a theory into various applications in the workplace, and field trips were fun and enjoyable learning experiences. These findings necessitate for the inclusion of field trip as complementary approach to teaching the major subjects as this will connect students' learning from the classroom into the real world. It is therefore advised that recommendations offered in this study be applied.

**Keywords:** *Political Science, Educational Field Trip, Action Research, Complementary Pedagogical Approach.*

## **Tracer Study of the Business Administration Graduates of UM Digos College from 2006-2012**

**Alex M. Taguenca, Jr., Jeaneth P. Tormis**

Business Administration Department, UM Digos College, Digos City, Philippines

### **ABSTRACT**

The study traced the graduates of the College of Business Administration from school years 2006 to 2012 in terms of general information, educational background, and employment data. The participants of the study were 300 graduates of Commerce/Business Administration of UM Digos from year 2006 to 2012. Characterizations of the graduates were done using descriptive method. This study used the Graduate Tracer Study (GTS) questionnaire of the Commission of Higher Education (CHED) with slight modifications. This study used descriptive statistics and cross-tabulation method as means of data analysis. The results revealed that most of the respondents were employed. It was also found out that their present jobs are related to the course they took up in college. The findings of the study also show high employability of Business Administration graduates. Communication and human relation skills are the primary competencies that can be attributed by the graduates in their stay at UM Digos College.

**Keywords:** *Tracer Study, Business Administration, Graduate Tracer, Descriptive Study, Digos City.*

## **An analysis on the typology of syntactic error in the academic essays of the Grade 11 students of University of Mindanao Peñaplata College**

**Geoffrey S. Marfa**

UM Peñaplata College, Peñaplata, Island Garden City of Samal, Philippines

### **ABSTRACT**

This study aimed to discover the syntactic errors found in academic essays of the Grade 11 students of University of Mindanao Peñaplata College. Specifically, the study aimed to discover and describe the typology of the syntactic errors in the academic essays of the Grade 11 students and to analyze the possible causes of the occurrence of syntactic errors in their academic essays. The participants of this study are from University of Mindanao Peñaplata College, specifically the Senior High School students. Among the 138 essays written by these students, there were only 20 purposively selected essays which were subjected to structural analysis. Analysis revealed four typologies of errors committed in essays: error in the use of verbs, error

in punctuations, error in the use of prepositions and error in the use of articles. The possible causes of these errors are Filipino English interference or mother tongue interference, lack of knowledge on the structure of the target language, over-usage or overgeneralization and failure in separating meaningful sentences. With these, a remedial intervention proposed in the study should be implemented to the Grade 11 senior high school students of University of Mindanao Peñaplata College.

**Keywords:** *Syntactic Errors, Language Learning, Incorrect Grammar, Structural Analysis.*

## **Flora of the University of Mindanao, Davao City, Philippines**

**Normeliza Morales, Hazel Carreon, Rizalyn Cudera, Juvy Digamo,  
Maria Elsa Gestoso, Milton Medina, Renelee Subsuban**

Math and Science Department, College of Arts and Sciences Education,  
University of Mindanao, Philippines

Email: hcgc\_1025@yahoo.com; mnd\_medina@umindanao.edu.ph;  
normelizamorales@yahoo.com; rizalyn\_borra@umindanao.edu.ph;  
zereleen\_226@yahoo.com

### **ABSTRACT**

Philippines ranked as one of the most diverse country in the world; it is also one of the 'Biodiversity Hotspot' where species extinction occurs at an alarming rate. Several reasons can be pointed to this such as poverty, poaching, illegal logging and mining among others. As a higher academic institution and one of the premier universities in the Philippines, University of Mindanao has a great role in averting species loss and promotes ecological rehabilitation and protection by intensifying its research, education, and conservation campaign. Localized education on Philippine biodiversity especially in Mindanao is one of the key to promote species conservation and protection in the area. This paper presents the inventory of plants within the University of Mindanao Matina Campus from June 2016 to January 2017. Opportunistic sampling at different sites within the campus was conducted. All plant species were identified using taxonomic keys, comparing the works of Philippine botanists and confirmation from experts. There are 64 families, 195 genera and 277 species of angiosperm; 2 families, 4 genera and 5 species of bryophytes; 6 families, 9 genera and 30 species of lichens; 9 families, 15 genera, and 28 species of pteridophytes were identified. Most of the angiosperm found in the campus are introduced while there are 4 vulnerable, 5 endangered, and 1 critically endangered tree species. All species of lichens and bryophytes have not yet been assessed by IUCN Red List of Threatened Species and there is one Mindanao endemic species identified. While a total of 7 species of pteridophytes are vulnerable. It is recommended to preserve the areas in the campus hosting threatened, vulnerable and endemic species. Conservation program must be conducted by providing

Information, Education and Communication (IEC) materials of biodiversity in University of Mindanao, Matina Campus, hosting biodiversity symposium, biodiversity exhibit and presentation to scientific conferences.

**Keywords:** *Plants, Inventory, University of Mindanao, Philippines.*

## **Probabilistic Measure of Microbial Quality of Vending Machine in the University of Mindanao Matina Campus, Davao City Philippines**

**Rizalyn B. Cudera**

Math and Science Department, College of Arts and Sciences Education,  
University of Mindanao, Davao City, Philippines  
Email: Rizalyn\_Borra@umindanao.edu.ph

### **ABSTRACT**

Microbial quality of vending machines in the University of Mindanao, Davao City was examined. Vending machine nozzles were swabbed in three sessions of the day and samples were grown in 3M Petrifilm *E. coli*/Coliform Count Plates. Results showed that out of 45 samples, 1 sample has *E. coli*, 19 samples with total coliform and 1 sample exceeded the acceptable microbial growth level. All five vending machines have 259 total coliform counts. Vending machine in GET contains *E.coli*, DPT and BE vending machines have the highest and least total coliform count respectively. A total of 1,121 vending machine users were noted in the entire study. DPT vending machine is the most visited while GET and HRM vending machines are least visited. The mean nozzle temperature was hot except for GET vending machine with warm temperature. DPT and BE vending machines have the highest and lowest level of microbial growth respectively. Microbial growth for all vending machines in terms of location and session are in acceptable level due to auto sanitation and cleaning activities of operators. However, the level of microbial growth has no significant relationship in terms of vending machine's location, session of the day, frequency of use and nozzle temperature. Presence of microbes might be due to other factors such as way of handling, prevailing environmental conditions, or cleaning of the vending machine from the outside, incoming microbial loads in the food and the opportunities for growth. Although total coliform found in nozzles are harmless except for *E. coli*, they are also indicators of the presence of other medically significant microbes such as *P. aeruginosa*, *Salmonella*, *Shigella*, *Vibrio cholera* and *Campylobacter* that pose high health risks. Further study of the other types of microbes must be performed. Other factors that affect the microbial growth must also be considered.

**Keywords:** *Vending machine, Microbial growth, University of Mindanao, Total coliform, Nozzle.*

## Fauna of the University of Mindanao, Davao City Philippines

**Ronnel P. Senining, Ranjiv E. Baleva, Christian Dell A. Gentallan  
Analyn A. Cabras, Milton Norman D. Medina, Ailene Espra, Edgar Retorta**  
Math and Science Department – College of Arts and Sciences Education  
University of Mindanao, Matina Campus, Davao City

### ABSTRACT

Under the umbrella program “Biodiversity Assessment of the University of Mindanao, Matina Campus”, a rapid survey of the Odonata, Lepidoptera, Aves, Amphibian and Bat fauna of the Matina campus of the University of Mindanao was conducted from October to November 2016. Different sampling protocols such as purposive sampling, acoustics, mist-netting and photo-documentation were conducted for Lepidoptera, Odonata, Aves, Amphibians, and bats. Results show that the University of Mindanao, Matina campus hoards nine (9) species of Odonata, fifteen (15) species of Lepidoptera, seventeen (17) species of birds, five (5) species of bats and six (6) species of amphibians. The depauperate species of Odonata in the campus can be attributed to severely disturb fluvial systems which can only cater highly tolerant species. The high species richness of butterflies, birds and bats can be attributed to the variety of angiosperms and trees in the campus which serves as the host and food plants for these species. Several endemic species were documented including *Rhipidura nigritorquis* (Philippine Pied fantail) and *Dicaeum australe* (Red keeled flower pecker), *Hypolimnas bolina philippensis*, *Ptenochirus jagori*, *Limnonectes leytensis* and *Platymantis hazelae*. Despite being situated in highly urbanized area, UM still harbours a rich faunal diversity and host several Philippine endemic species suggesting that UM campus still has significant green spaces that serve as microhabitats to these species. This data should be included in the planning of future infrastructure projects in the campus to protect the remaining faunal diversity in the campus.

**Keywords:** Fauna, Survey, University of Mindanao, Davao, Philippines.

## WORKING COMMITTEE

**Dr. Maria Linda B. Arquiza**  
AVP - Research and Publication Center  
Conference Chair

**Dir. Milton Norman D. Medina**  
Director for Qualitative and Biodiversity Studies  
Conference Co-Chair

**Mr. John Vianne B. Murcia**  
Book of Abstracts Copy Editor & Reviewer

**Ms. Karen Gale Lodia-Alarcon**  
Secretariat/ Registration

**Ms. Jenecel Papasin**  
**Ms. Joice Casila**  
**Mr. Habib Pagilogon**  
Exhibits Committee

**Mr. Diether Dave Alan Ingco**  
Book of Abstracts Cover Lay-out and Design

### Review Committee

Dr. Maria Linda B. Arquiza (Chairman)  
Dir. Milton Norman D. Medina (Member)  
Dr. Adrian M. Tamayo (member)  
Mr. John Vianne B. Murcia (Member)

## PANEL OF JUDGES

### Environment/ Health Cluster

Milton Norman D. Medina, MA,MSc.  
Elsa May Baron, MSc.  
Franklyn Buenaflor, MSc.

### Industries/Technologies Cluster

Roberto T. Diamante, Ed.D., D.M.  
Mervin A. Osic, MA.  
Engr. Arnel M. Rodriguez

### Economy/UM Gains Cluster

Adrian M. Tamayo, Ph.D.  
Mervin Gascon, Ph.D.  
Roy G. Ponce, Ed.D.

### Institutions/Education Cluster

Dennis A. Alonzo, Ph.D.  
Dhan Timothy Ibojo, Ph.D.  
Exequiel R. Gono, Jr., MA.

### Poster Presentation

Analyn A. Cabras, MA.  
John Vianne B. Murcia, MBA.  
Phany Castillo-Ho, MM.

### Faculty Research Presentation

Fernando Magdato, Jr., Ph.D.  
Gloria P. Gempes, Ed.D., D.M.  
Myrna S. Viado, DBA.

