

# BOOK OF ABSTRACTS

**2ND NATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE** December 5 & 6 | Subic Grand Harbour Hatel, Subic Freeport Zone, Zambales

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This book contains all of the abstracts of the research papers presented during the Aguman Ning Belwan 2024: 2nd National Multidisciplinary Research Conference,

held on December 5-6, 2024, at the Subic Grand Harbour Hotel in Subic Bay Freeport Zone, Zambales.



## CONFERENCE OBJECTIVES

This conference aims:

- 1. To provide an avenue for further exploration and development of research outputs;
- 2. To provide a forum for the productive exchange of ideas and sharing of experiences among academicians, practitioners, and stakeholders;
- 3. To provide opportunities for researchers to disseminate relevant research in a wide range of discipline within the country; and
- 4. To enable participants to establish networks and mutually beneficial partnerships with professionals from other HEIs and the stakeholders across national and international borders.

## **RESEARCH AREAS**

- Social Sciences
- Human Sciences
- Natural Sciences
- Education
- Health and Allied Medical Sciences
- Business and Economics
- Industrial and Information Technology
- Engineering
- Other areas of discipline

### MESSAGE FROM THE GOVERNOR



### HON. SUSAN A. YAP PROVINCIAL GOVERNOR PROVINCE OF TARLAC

I am honored to extend my warmest greetings to all our academicians, practitioners, stakeholders, and to all our participants as you gather for the **AGUMAN NING BELWAN 2024: 2ND NATIONAL MULTIDISCIPLINARY RESEARCH CONFERENCE** organized by the Tarlac State University (TSU) Research Development Office. This year's theme, *"Research Revolution: Transforming Ideas into Impact"* underscores the vital role of research in national and global development.

The conduct of multidisciplinary research allows comprehensive and holistic understanding of complex issues by integrating, interdisciplinary perspectives. This enables our researchers to deeply explore problems from various angles and develop innovative solutions. Collaboration across disciplines fosters creativity and innovation by bringing together diverse ideas, robust methodologies, comprehensive analyses, and nuanced interpretations of research findings. In this day and age, many real-world problems are faceted and require interdisciplinary perspectives to be effectively addressed transcending traditional disciplinary boundaries. More so, this conference enables to bridge gaps between disciplines and promotes cross-disciplinary dialogue and collaboration. By fostering connections between researchers with diverse backgrounds and expertise, multidisciplinary research can build bridges that facilitate knowledge exchange and mutual learning. The linkages built from this conference will translate research findings into practical applications and solutions. By combining insights from multiple disciplines, we are able to develop innovative technologies, policies, and interventions that address societal needs and contribute to positive change. By embracing interdisciplinary collaboration, researchers can unlock new possibilities and create transformative outcomes that benefit individuals, communities, and the world at large.

As the Governor of Tarlac Province, I commend the dedication and hard work of all researchers, scholars. and participants who come together to share their knowledge and expertise in various disciplines. Your commitment to advancing research and turning ideas into impactful solutions is truly commendable.

1 believe that through collaborative efforts and a spirit of innovation, we can address the challenges facing our communities and contribute to the development and progress of our province and our nation as a whole. I encourage you all to engage in meaningful discussions, exchange ideas, and forge new partnerships that will lead to tangible outcomes and make a real difference in our society.

I wish you all a successful and productive conference. May your research endeavors inspire others and pave the way for a brighter future for all.

Thank you and Mabuhay!



### MESSAGE FROM THE TARLAC CITY MAYOR



### HON. CRISTY ANGELES MUNICIPAL MAYOR CITY OF TARLAC



A pleasant and fruitful day to all!

On behalf of the City Government of Tarlac, it is my honor to greet all of you in this milestone event, the **2nd International Multidisciplinary Research Conference**, organized by the Tarlac State University.

**Research is the backbone of progress, driving innovation and growth in various fields.** The conference's multidisciplinary approach fosters collaboration, and knowledge-sharing. By bringing together experts from diverse backgrounds, we facilitate the exchange of perspectives, leading to groundbreaking outputs.

This conference is proof of the boundless potential of research to drive change in our communities, nations, and the world. Today, we recognize that research is not merely an academic pursuit but a powerful tool to create direct and tangible benefits for our people.

In Tarlac City, we have always believed in the power of knowledge to change lives for the better. Through collaboration and innovation, research outputs have guided us in crafting effective policies, solving pressing issues, and addressing the unique needs of our constituents. From advancements in agriculture, disaster response, environmental management, sustainable development, to education and public health, the connection between research and real-world applications has always been a vital part of good governance.

I personally believe that effective governance is one that uses research-backed data and information in planning and policy formulation. We cannot just entrust our decision-making to chance. We need to have the correct data, the exact figures, and the most accurate and timely information because every decision that we make impacts the lives of our people, and that is the very message of our theme for this conference, "**Research Revolution: Transforming Ideas into Impact**."

Allow me to express my heartfelt gratitude to our distinguished speakers, who bring their expertise and insights to this conference:

#### 1. DR. NELSON B. GUILLEN

Joseph Henry Ng Professorial Chair in Entrepreneurial Management at the De La Salle University He is also the Editor-in Chief of the "Seisense Business Review" and the "Journal of Global Business by ATIFTAP";

#### 2. DR. MARIE PAZ E. MORALES

·University Professor at the Philippine Normal University

Editor in Chief of the "Asia Pacific Higher Education Research Journal" and the "Journal of Educational and Human Research Development of Southern Leyte University

As well as the Managing Editor of the AsTEN Journal of Teacher Education

Thank you so much for sharing your knowledge and time with us. Your expertise in educational research and commitment to excellence resonate deeply within our academic community, and will ultimately benefit our people.

I am confident that the knowledge and ideas that will be shared and generated in this conference will ignite an even greater thirst for knowledge. Let us strive to ensure that research does not stay confined within the pages of journals but is translated into concrete action for the betterment of all.

As the first lady Mayor of Tarlac City in 228 years, I pledge our administration's unwavering support to the Tarlac State University and its endeavors. Together, we shall nurture a culture of continuous learning, service, and unity.

Through our collaborative efforts, we will discover breakthroughs in our unending quest for a better life for all. Basta't patuloy lamang po tayong Magkaisa, Bawat Oras Sama Sama. Maraming salamat po.



### MESSAGE FROM THE UNIVERSITY PRESIDENT





Tarlac State University is honored to conduct the **Aguman Ning Belwan 2024, the 2nd** National Multidisciplinary Research Conference.

Through the Office of University Research Development, the university spearheads this conference with the theme, **Research Revolution: Transforming Ideas Into Impact**.

This initiative promises to significantly influence professional growth, partnership, and innovation opportunities, providing a platform for personal and professional development.

It offers a unique conference for interaction with others, providing up-to-date information on developments in your expertise, and a rare opportunity for knowledge expansion.

Our plenary speakers will undoubtedly contribute to our knowledge and understanding as they offer their expertise in Multidisciplinary fields. The respected lineup of speakers will enlighten, inspire, and ignite discussion in their respective fields!

Let's continue these initiatives to have the opportunity to learn from the experts. I look forward to following our researchers' endeavors and hope they will join more conferences with us.

Thank you very much, and I wish you continued success and inspiration in your research endeavors.



#### MESSAGE FROM THE VP FOR RESEARCH, INNOVATION, AND EXTENSION



### **DR. ERWIN P. LACANLALE VICE PRESIDENT FOR RESEARCH, INNOVATION, AND EXTENSION** TARLAC STATE UNIVERSITY

It's truly exciting to share this message as part of the **Aguman ning Belwan: 2nd National Multidisciplinary Research Conference**. This event has always been more than just a gathering of researchers—it's a celebration of ideas, collaboration, and the incredible impact that research can have on our communities and beyond.

This year's theme, "**Research Revolution: Transforming Ideas into Impact**," resonates deeply with what we, as researchers, strive to achieve. It's a powerful reminder that the work we do is not just about producing data or writing papers—it's about creating meaningful change, solving real-world problems, and leaving a legacy that benefits future generations.

The essence of Aguman ning Belwan—a fellowship driven by inquiry and shared learning perfectly captures what makes this conference so special. It's a space where diverse perspectives come together, where connections are made, and where ideas grow into something bigger than us.

To the organizers, your hard work and dedication have created this incredible opportunity for us to connect and grow as a community. To all participants, whether you're here to present, learn, or collaborate, thank you for bringing your passion and expertise to this event.

I hope this conference inspires each of you to take bold steps in your research journey, to collaborate with others, and to always aim for impact. Together, let's keep pushing boundaries and making a difference.

Congratulations to everyone involved in making Aguman ning Belwan a success! I can't wait to see the ideas and partnerships that will emerge from this gathering.

Thank you so much and mabuhay po tayong lahat!



### MESSAGE FROM THE CONFERENCE CONVENOR

### **ROGEL L. QUILALA, DIT OURD DIRECTOR** TARLAC STATE UNIVERSITY



I am honored to welcome everyone to the **2nd National Multidisciplinary Research Conference** warmly, **Aguman Ning Belwan 2024**, a gathering marked by my true pleasure and high commitment to spreading knowledge. This conference occurs at a critical juncture where the impact of research continues to expand across various disciplines, and we find ourselves in the face of what I would like to refer to as the research revolution.

The theme of this year's conference—"**Research Revolution: Transforming Ideas into Impact**" explicitly speaks about the changing face of research: so full of transformative power. Thinking about the dynamic shifts faced by various sectors, whether in social sciences, business, economics, information technology, engineering, or other areas of discipline, it may be found that the research possibilities can be used to create a meaningful and sustainable impact. Nevertheless, this transformation pertains not solely to the quantity of ideas generated but also the quality and how those ideas contribute to addressing real-world problems, shaping policies, and improving human lives.

For every conversation, every presentation, and every paper delivered, here is a chance to expand the frontiers of knowledge that we guarantee will come from further exploration and development of research outputs. This conference offers a productive platform for exchange among academicians, practitioners, and stakeholders, fostering collaboration and dialogue that may spark innovations and improvements in our understanding of our challenges and opportunities.

The other significant aspect of research is that it goes beyond the walls of academic institutions. It involves networking and mutually beneficial partnerships across different institutions, industries, and international borders. This conference fosters the exchange and blending of ideas, thus providing the basis for developing the next wave of solutions to global and local challenges through the connections of researchers and stakeholders.

I sincerely thank all the OURD team, speakers, and participants for making this conference possible. There will be insightful exchanges, meaningful collaborations, and new impacts in research that will stem from this event. We are not just dreaming about a better future but also building it with research, innovation, and the strength of collective action.

Thank you, and may Aguman Ning Belwan 2024 be fruitful and inspiring for everyone.



### MEET THE PLENARY SPEAKERS



University Professor, Philippine Normal University Editor-in-Chief, Asia Pacific Higher Education Research Journal Editor-in-Chief, Journal of Education and Human Research Development Managing Editor, Association of Southeast Asian Nation Teacher

Education Network (AsTEN) Journal of Teacher

DR. MARIE PAZ E. MORALES

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#### Joseph Henry Ng Professional Chair in Entrepreneurial Management,

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DR. NELSON B. GUILLEN, JR.



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#### Perceived Impact on NCII Competency Integration in the Study of Commercial Cookery Among Grade 10 Students

#### Angeline V. Villareal, Samuel A. Balbin, Belen B. Balbuena, and Milany M. Averilla

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This study delved into the impact of integrating cognitive and practical skills within the National Certification II (NC II), in Commercial Cookery on student preparedness and assessment outcomes. The objective is to enhance vocational training programs by analyzing the relationships between these variables and identifying areas for improvement. Using an embedded mixedmethods approach, the research combined quantitative and qualitative data for a comprehensive analysis. Surveys were employed to measure cognitive skills, practical skills, preparedness, and assessment performance among grade 10 students who has taken the NC II, while qualitative insights were obtained from interviews and focus group discussions with educators and students. Pearson correlation coefficients indicated very high positive correlations between cognitive skills and practical skills (r = 0.929) and between preparedness and assessment outcomes (r = 0.917), with p-values of 0, highlighting the strong interdependence of these variables and their significant impact on educational performance. The study emphasizes the importance of integrating cognitive and practical skills in vocational education, demonstrating that improvements in these areas are closely connected. Additionally, the significant relationship between preparedness and assessment outcomes underscores the need for thorough preparation to achieve better results. Based on these findings, recommendations include developing targeted educational strategies to bolster both cognitive and practical skills and enhancing preparedness efforts. Future research should focus on exploring the longitudinal impacts of these interventions and applying the findings to broader educational contexts to further validate their effectiveness.

**Keywords:** Practical Skills, Commercial Cookery, Assessment, Vocational Training, National Certification

#### **Comics as an Assessment Tool for Learning Mathematics**

#### Liberty Gay C. Manalo

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This study examines the utilization of comics as an evaluative instrument for the acquisition of mathematical knowledge, as perceived by pre-service teachers with a specialization in mathematics. Moreover, it examines the possible consequences of this teaching method in the field of mathematics education. Utilizing an exploratory-descriptive qualitative research approach, the present study sought to investigate the viewpoints of participants regarding the utilization of comics as a means to assess their mathematical aptitude. Pre-service mathematics instructors were assigned the responsibility of creating their own digital comics utilizing comic maker tools that are readily accessible. Their work was then assessed using rubrics devised by the class. Insights were gathered through the utilization of semi-structured interviews. The data analysis revealed themes such as effectiveness in conceptual understanding and demonstration, practical application and integration of mathematics, classroom utilization and knowledge sharing, development of creativity, critical thinking and research interest, facilitating discovery, learning and reflection, and learning improvement, knowledge sharing and ownership emanated when the data were analyzed thematically. The conversations revolved around the development of 21st-century competencies, including proficiency in information media and technology, fostering innovation in learning, and enhancing communication effectiveness. The research emphasized the importance of comics as a genuine formative assessment instrument and emphasized their capacity for self and peer evaluation. Based on the first findings pertaining to the effectiveness of comics in the context of mathematics education, it is advisable to conduct additional study in order to investigate their potential utilization as an evaluative instrument within classroom settings. These inquiries have the potential to yield significant findings regarding the pragmatic application and influence of comics in augmenting mathematical educational encounters.

Keywords: assessment, comics, pre-service teachers, mathematics

#### Service Quality and Customer Satisfaction Towards a First-Choice Decision Framework of a Tourist Destination in Selected Resort Hotels in Palawan

### **John Michael O. Verzosa**<sup>1</sup>, Ronaldo A. Poblete<sup>2</sup>, Zosimo O. Membrebe Jr.<sup>3</sup>, Leveric T. Ng<sup>4</sup>, Amy C. Daraway<sup>5</sup>, and Maria Nimfa R. Diaz<sup>5</sup>

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Service quality (SQ) is one of the main determinants of customer satisfaction (CS), and a focal topic of researchers and practitioners alike across all industries. This research aims to determine the relationship and trends between Service Quality and Customer Satisfaction (SQCS), identify the gaps, and formulate strategies. The study utilized a quantitative research design employing the descriptive-correlational research method. Data was collected from 130 guests of 5 resort hotels in Palawan. They were asked to rate their opinion on a five-point Likert scale ranging from Very Little Extent to Very Large Extent levels. Data in this research was acquired from guests from five resort hotels located in Palawan. To address this objective, the researcher analyzes the effect of SQ dimensions (Tangibility, Reliability, Responsiveness, Empathy, and Assurance) on CS factors (Ambience, Value-Added, and Hospitality). Multiple regression analysis denotes increases of 34.0% 21.2%, and 20.0% on the extent of the effect attributed to SQ dimensions on CS factors, respectively. Results obtained indicate that Tangibility, Assurance, and Responsiveness have a positive impact, whereas Empathy and Reliability do not. By establishing the CASA WISH (House of Wish) first-choice decision framework of a tourist destination, the researcher postulates that Communication, Attention, Safety, Attitude, Wellness, Information, Security, and Health are key elements in prioritizing, improving, and reinforcing the significant positive relationship between service quality - the consistent process of understanding, addressing, implementing, fulfilling, and adhering to the client's needs and demands, without overstepping the transaction's provisions to the entity's discretion, and customer satisfaction - the mind, heart, and spirit of marketing which manifests a business philosophy and strategy, leading to loyalty and profitability of resort hotels.

Keywords: Service Quality, Customer Satisfaction, Tourism, Hospitality, Services Marketing

#### Management Practices, Faculty Self-Efficacy, and Board Exam Performance in Higher Education

#### **EUGELYN R. FELIX**

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This study explores the influence of management practices on faculty self-efficacy and its subsequent impact on board exam performance across various academic departments in a higher education institution. Using semi-structured interviews with 28 faculty members, key themes were identified regarding perceptions of management, faculty confidence, and strategies for improved student outcomes. The findings reveal that effective management practices, such as open communication, transparency, and strategic alignment of teaching assignments with faculty specialization, significantly enhance self-efficacy among educators. Factors influencing selfefficacy included professional experience, access to continuing professional development (CPD), and institutional support. The study also highlights a positive correlation between faculty selfefficacy and improved board exam performance, attributing recent successes to targeted interventions, such as regular campus reviews and specialized training programs. However, issues related to infrastructure, general services, and inconsistent adherence to protocols were noted as barriers to optimal faculty performance. Recommendations emphasize the need for enhanced resource allocation, adherence to best practices, and recalibration of faculty development strategies to sustain high board exam passing rates and elevate the institution's academic standing. This research contributes to a deeper understanding of the interconnected roles of management practices, faculty efficacy, and student achievement, offering actionable insights for policy makers and educational administrators.

Keywords: Management practices, faculty self-efficacy, board exam performance, higher education, professional development

#### School Need Assessment: Key for Gender Responsive Extension Program

#### Eugelyn Ramos Felix, Judith E. Daracan, Paulino V. Derilo

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The study employed a descriptive design using a quantitative approach to assess the training needs of faculty and students of secondary schools. The respondents included male and female faculty, non-teaching staff, and students across various secondary schools, selected through purposive sampling. A self-made survey questionnaire was used to gather data on the personal information, training experiences, and training needs of the respondents. The questionnaire also included a 5-point Likert scale to assess the degree of knowledge and skills of both student and teacher respondents. The data analysis involved frequency and percentage distribution to determine the distribution of responses, providing insights into the training experiences, knowledge, skills, and needs of the respondents. Descriptive statistics, including mean and standard deviation, were used to assess their degree of knowledge or skills. The study found that the majority of the faculty members are relatively young, with 75.6% falling within the age brackets of 21-40 years. The faculty members have advanced levels of communication, interpersonal, and pedagogical skills, but their ICT, leadership, technological, research writing and publication, entrepreneurship, mental health, and gender and development related skills are at an intermediate level. The most pressing needs among the faculty respondents are research writing and publication, ICT skills, and pedagogical skills. The majority of the student respondents are within the 11-15 years old age range, and a larger population of female students compared to male students. The study highlights the importance of addressing the diverse range of special needs among both students and faculty members through targeted interventions and support. The findings provide valuable insights that leads to the development of gender responsive extension program to enhance the skills and knowledge of the secondary school faculty and students.

Keywords: school need assessment, extension program, training needs

#### The Zotero Experience: Development and Validation of "Bibliographical Institutional Repository of Research Outputs (BIRRO)"

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The increasing volume of research outputs such as faculty researches, dissertations, master's thesis and undergraduate thesis at Catanduanes State University (CatSU) often remains inaccessible in its digital form, limiting their impact and hindering knowledge dissemination. To address this issue, this study aimed to develop and validate a Bibliographical Institutional Repository of Research Outputs (BIRRO) based on the Zotero platform. BIRRO is designed to enhance the discoverability, accessibility, and utilization of CatSU's research outputs. The development and validation process involved multiple phases, including analysis, design, try-out, and evaluation. Results showed that BIRRO offers a user-friendly interface that facilitates the submission, organization, and dissemination of research resources. The platform's effectiveness was demonstrated through its successful integration into the Research and Development Services (R&DS) workflow and positive user feedback. By providing a centralized repository for research outputs in the University, BIRRO promotes knowledge sharing, collaboration, and the advancement of research at the institution. Future recommendations include expanding the repository's functionalities and integrating it with other institutional systems to further enhance its impact. CatSU should also continue to invest in the maintenance and improvement of CatSU-BIRRO, ensuring it remains up-to-date and user-friendly. Additionally, ongoing training and support should be provided to faculty and researchers to maximize their utilization of the repository's capabilities.

**Keywords:** accessibility, CatSU BIRRO, developmental research, research repository, research management software, visibility

## Building Student Loyalty Through Service Excellence: A Correlational Study

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This study investigated the relationship between service quality, student satisfaction, and loyalty among Bachelor of Elementary Education students at Apayao State College, Luna Campus. A descriptive correlational survey design was employed to analyze data from 86 respondents. Results revealed strong, positive correlations among the study variables, indicating that enhancing service quality significantly impacts student satisfaction and loyalty. These findings align with previous research emphasizing the crucial role of service quality in higher education. The study underscores the need for institutions to prioritize service improvement initiatives to foster student success and institutional sustainability.

Keywords: Digital Archive System, Academic Records, Information Technology, Record Management

## Storytelling, Structure, and Themes: Narrative Analysis of Digital Food Stories as Place Biographies

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This paper examines the narrative structure and thematic content of selected digital food stories of Negros Occidental in Negros Island Region of the Philippines. These stories-collected from FEATR, a YouTube channel that features content on Filipino culture and tradition, particularly food and travel-serve as the primary materials for analysis. Using the Place Biography Framework alongside narrative analysis, the study reveals that all collected food stories follow Active-Immersive Pattern, an emergent structure characterized by a dynamic interplay between the narrator, local communities, and the audience. Central to the narrative's development are the personal and collective experiences associated with the foods being narrated. Unlike traditional linear plot frameworks such as Freytag's Pyramid and Plato's Plot, the Active-Immersive Pattern is defined by a cyclical, non-linear, and immersive form, wherein the narrator, the locals sharing their stories, and the audience all participate in both the narrative and storytelling process. While some elements of classical narrative structure remain-such as the introduction, development, and conclusion-the Active-Immersive Pattern diverges from the conventional progression of beginning, middle, and end, favoring a more fluid mode of storytelling. Moreover, the analysis reveals the interconnections between food, people, and place, which is a key thematic element that narrates the biography of the place where these stories originate, evolve, and are passed down through generations. These food stories do not just recount how food is prepared and consumed; they illustrate how food traditions are inseparably tied to culture and identity of a place. This study is limited to the selected digital food stories and does not encompass all food narratives from the province. Further studies could explore how digital food storytelling shapes communities, especially its influence on food tourism and the transmission of food-related knowledge.

Keywords: food stories, place biography, digital storytelling, narrative analysis, Negros Occidental

#### Gendered Pronouns and Explicit Markings of Sex Detection in Text using Multinomial Naive Bayes Algorithm

#### Mr. Julius Caesar C. Ramos, and Dr. Theda Flare G. Quilala

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Gender bias in language often reinforces stereotypes by assigning roles or behaviors to specific genders. Detecting such bias is crucial for promoting equality, but existing approaches often focus on binary classifications of text as sexist or non-sexist due to limited academic datasets addressing diverse forms of bias. This study addresses this gap by training a Multinomial Naive Bayes algorithm on a curated dataset of over 3,511 texts, annotated for Generic Pronoun usage (e.g., "his," "her") and 145 Explicit markers of sex (e.g., "chairman") from recent research. The study aims to expand Natural Language Processing methods in the field of gender bias detection. The algorithm achieved a 90% accuracy rate in identifying gendered pronouns, demonstrating its capability to detect gender bias. These findings highlight the critical role of academically labeled datasets in enabling accurate bias detection. Future work should focus on expanding datasets to cover additional gender bias types, further enhancing bias detection capabilities in text analysis.

**Keywords:** Gender and Development, Gender Bias, Natural Language Processing, Multinomial Naïve Bayes, Text Processing

#### Computational reverse protein engineering of a lipase from Pseudomonas aeruginosa in n-hexane

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This study used computational methodologies to investigate the behavior of *Pseudomonas* aeruginosa PAO1 lipase (PAL) in n-hexane. Molecular dynamics simulations were employed to evaluate perturbations on the structural stability of the secondary structures of the lipase. B-factor analysis served as an indirect stability measure, while gorge radii indicated enzymatic activity. Findings reveal that the  $\alpha$ 3 helix significantly influences the structural stability of PAL, though stability-activity relationships remain complex. Mutant forms characterized by dual-lids including mutants of  $3_{10-2}$ ,  $\alpha_6$ , and the triple-point mutant of the eight  $\beta$ -strands — exhibited highly open gorges throughout simulations, with flexibility in typically rigid residues of non-310 lid1 helices and highly flexible dual-lid  $3_{10}$  helices. Perturbation of lid  $3_{10-2}$ , especially prominent in the  $\alpha$ mutant, suggests a potential trigger mechanism, as its gorge radii fluctuated considerably between open and closed states. Other significant regions include the  $\alpha_2$  helix and the  $\alpha_7 - \alpha_8$  loop, which displayed substantial flexibility in both highly open and closed systems, indicating their roles as hinges in the dual-lid configuration. Most mutant forms tended to remain open, with only three mutants —  $\alpha_{7}$ ,  $\alpha_{1}$ , and  $\alpha_{2}$  – remaining rigidly closed, supporting reports that lipases prefer an open state in organic media. For potential enhancement, the proline mutant of 3<sub>10-2</sub> (R119P) emerged as the most promising, balancing stability and dual-lid flexibility. Collectively, these findings offer insights into structural dynamics of PAL, elucidate its gating mechanism, and identify strategies for enhancing stability, with implications for biotechnological applications.

Keywords: Computational protein engineering, Lipase, Pseudomonas auruginosa PAO1, Proline profiling, Molecular dynamics simulations

#### Application of LabVIEW and Arduino Control System Computations and PID Simulation

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This study focuses on the integration of LabVIEW and Arduino for control system computations and simulations, tailored explicitly for the feedback and control systems course in Philippine electronics engineering. Emphasizing the crucial role of control systems in technological advancements, the research explores the design and development of a LabVIEW-interfaced Arduino platform. The platform covers essential numerical computations and PID controller simulations, aligning with educational objectives. The hardware unit, featuring components like Arduino Mega and sensors, is efficiently designed with a printed circuit board. The LabVIEWcreated graphical user interface facilitates seamless communication, enabling real-time control and visualization. Simulated results validate the accuracy of control system computations and showcase successful PID simulations for beam balancers and various motors.

Keywords: LabVIEW, Arduino, feedback



#### Assessment of the Natural and Physical Resources of Davao De Oro in Providing Agriculture and Fisheries Extension Services

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This study provides baseline data on Davao de Oro's natural and physical resources in providing agri-fishery extension services as it prepares for the implementation of Executive Order No. 138, s. 2021 also known as Full Devolution of Certain Functions of the Executive Branch to Local Governments, Creation of a Committee on Devolution, and other purposes to address persistent development issues and empower LGUs for local autonomy. This study employed qualitative research methods such as documents review and structured learning exercises. The results revealed that the agri-fishery profile of the natural and physical resources used in agriculture and fishery in Davao De Oro is divided into five strategic zones and remaining space for future expansion. In terms of food sufficiency levels, the province has more than 100% food sufficiency for rice (104.57%) and pork (326.88%). However, for other food staples such as corn (16.26%), poultry meat (76.03%), poultry eggs (11.13%), and fish (6.89%), food sufficiency level is lower. The programs and services provided by PAGRO, PVO, and MAGRO are aligned with the primary final outputs of the DA, especially on the delivery of agriculture and fishery support services, the development, implementation, enforcement, and monitoring of regulations and standards. The agri -fishery infrastructure and mechanical resources available in the offices and provided to the farmers and fisherfolks include farm-to-market roads, production support facilities and machinery, post-harvest facilities, machinery and equipment. Lastly, the policies developed and implemented by the provincial and municipal agriculture and veterinary offices support agri-fishery extension programs, implement regulations, and national policies. Thus, it was recommended that the LGU's in the province develop strategic crop-sub-development zones, especially for corn and other food staples, livestock, and poultry -sub-development zones for chicken and other poultry products and fishery for marine fishery and aquaculture. Agri-fishery infrastructure, specifically FMRs, should reach GIDAs of the province, while other infrastructure projects should be climate change resilient to withstand natural hazards. Also, there is a need to increase the acquisition of agrifishery machines and equipment which adopt the latest technologies that best suit the farm and fishery milieu of the province. Lastly, agri-fishery policies shall continue to support agri-fishery production and development while implementing regulatory measures.

Keywords: Davao De Oro, Agri-Fishery Sector, Agri-Fishery Resources

#### EXPLORING THE POTENTIAL OF SHARK-INSPIRED RIBLET DESIGNS ON NASA SC(2) - 0610 FOR MITIGATING SKIN FRICTION IN HIGH-SPEED FLOW

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This study investigates the efficacy of shark-inspired riblet designs in mitigating skin friction drag on the NASA SC(2) - 0610 airfoils in high-speed flow environments, utilizing SolidWorks CFD simulations. The airfoil, with standardized dimensions of a 1-meter chord and a 5-meter span, is the baseline for comparison against three distinct riblet configurations. Riblets, strategically positioned relative to airflow direction, were designed and analyzed for their impact on skin friction drag reduction. Given the supercritical nature of the chosen airfoil and observations from simulations indicating turbulent flow occurring aft, the riblets were positioned under two placement values, at 150 mm and 671.78 mm from the leading edge. The height and spacing of each riblet were meticulously calculated through mathematical computations. The research evaluates three riblet designs, height-priority, spacing-priority, and a balanced configuration, to determine their effectiveness in reducing drag. The results highlight the superior performance of the height-priority riblet configuration (Riblet 2), located 671.78 mm from the leading edge, in reducing skin friction drag at Standard Sea Level Conditions (SSLC) and an altitude of 10667.48 meters. Compared to the smooth surface (control), Riblet 2 demonstrated significant reductions, achieving a 9.05 % reduction in skin friction drag at an altitude of 10667.48 meters and a 14.45 % reduction at SSLC. These findings suggest that riblets with larger height dimensions exhibit greater effectiveness in specific high-speed flow regimes. Furthermore, these findings align with previous studies on riblet surfaces, affirming the consistent trend of skin friction drag reduction with riblet configurations. Overall, this research contributes to advancing the understanding of bio-inspired aerodynamic solutions and offers practical insights for optimizing aerospace vehicle performance in high-speed flow environments.

Keywords: biomimicry, skin friction drag, riblet, SolidWorks

#### **Anchovies Engraulidae Ice Cream**

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Anchovies have many vitamins and minerals that provide significant health benefits. They are best known as a source of omega-3 fatty acids, which promote brain and heart health. On the other hand, ice cream is a highly popular, palatable, nutritious, and commercially important dairy product, usually made from dairy products, such as milk and cream, and often combined with fruits or other ingredients and flavors. The researcher took advantage of the abundance of anchovies in the supply. Known for its health benefits, the researcher incorporated anchovies in ice cream to create a highly nutritious product without compromising palatability. The study is limited to determining the acceptability of anchovies ice cream in terms of color, odor, taste, and mouthfeel. The pH of the product was also determined. There were four treatments: A (25% anchovies w/w), B (50% anchovies w/w), C (75% anchovies w/w) and D (100% anchovies w/w). Based on the data gathered, there was no significant difference in the acceptability of the four treatments of anchovies ice cream in terms of its acceptability level in all sensory parameters and its general acceptability. Overall, all treatments had a mean score of "like slightly" in their acceptability score. Regarding pH, it was noted that the more anchovies added, the more acidic the product becomes. Although there was no significant difference, the researchers labeled treatment B as the most acceptable since, in almost all parameters, treatment B has the highest acceptability score. The study showed that anchovies were acceptable raw dessert materials, and varying amounts did not affect the acceptability.

**Keywords:** Seafood Ice Cream, Fish Ice Cream, Seafood Dessert, Ice Cream, Anchovy Regression

#### Aerobic walking Exercise: Effect on the Heart Rate, Blood Pressure, and Weight Among Students

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A study was conducted to look into the effects of prescribed aerobic walking exercise to lower the heart rate, blood pressure and weight among students. Specifically, the objectives were: (1) to describe the heart rate, blood pressure, and weight exposed in aerobic walking exercises; (2) to determine the heart rate, blood pressure, and weight of the students not exposed to aerobic walking exercise; (3) to compare the heart rate, blood pressure, and weight of students exposed and not exposed in aerobic walking exercises. There were 100 first year college students from the University of Science and Technology of Southern Philippines, Claveria, Misamis Oriental who were the participants of the study in a quasi- experimental research design. Mean, frequency, percentage, and analysis of covariance were the statistical tools used in the study. Both the experimental and control group have normal recovery heart rate, blood pressure, and weight than non-aerobic exercise. The type of aerobic exercise has significant effect in lowering or increasing systolic blood pressure and weight. There is no significant effect in lowering recovery heart rate (RHR) regardless of age and sex.

Keywords: aerobic walking exercises, heart rate, blood pressure, weight, and quasi-experimental

## Design and Fabrication of Portable Grating Tool with a Mechanical Grating Plating Changer

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Many inventions were made in the past to promote less extensive labor on grating fruits and vegetables for product processing but none of those technologies has the capability to change different kinds of grating plates for different sizes and shapes as may be desired for the crops to be grated. It is an objective of the study to design and fabricate a portable grating tool with a mechanical grating plate changer, more particularly a portable grater tool with a mechanical structure for changing different kinds of grating plates that are used to cut vegetables and other crops into different sizes and shapes as may be desired. The presented grating tool was tested through actual grating by utilizing three different kinds of grating plates and three kinds of crops with the desired kinds of grate. It was found out that the grating tool has the characteristics of convenience, is easy to use, and can be used not far from what the end-users are used to.

Keywords: Portable Grating Tool, Mechanical Grating Plate Changer, DDOSC

#### Development of a Pre - Approval Document Routing System with Facial Recognition for Enhanced Security and Authentication

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The automated workflow has transformed business operations of document management and approval systems to more promising, secure, and collaborative solutions. This paper presents a review of the evolutionary history of document routing systems from paper-based workflows to digital systems powered by cloud computing and machine learning. Facial recognition technology built into such systems provides advanced security through the ability of users to be verified by biometric means, reducing dependency on password credentials and other susceptibility-prone keycards. Implementation of FRT in pre-approvals of document routing ensures workflows are well -streamlined while unauthorized access is reduced, and general operational efficiency improved. However, there are several kinks that this technology needs to get past before such equitable and secured usage is ensured, ranging from algorithmic biases to broader privacy concerns. While future developments, such as multiple biometric identifications, will further improve document management systems, ethical issues and user acceptance also must be considered. The paper concludes by considering recommendations for future research about the capabilities and challenges of state-of-the-art document management systems.

**Keywords:** Pre-approval document routing, facial recognition technology, biometric authentication, workflow automation, document management systems, cloud computing, machine learning, algorithmic bias, privacy concerns, operational efficiency

#### INFLUENCE OF BIOCHAR DERIVED FROM AGRICULTURAL WASTE ON SOIL PROPERTIES AND PRODUCTIVITY OF CARROTS (*Daucus carota*)

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The application of biochar, a carbon-rich material produced by the pyrolysis of organic matter, has gained attention as a sustainable soil amendment due to its potential to improve soil fertility and crop productivity. This study aimed to evaluate the effects of applying biochar derived from various agricultural waste sources, including corn cobs/ stalks, coconut husk, peanut shells, and sugarcane bagasse, on the growth and yield of carrots. The experiment was conducted at the Institute of Agricultural Technology, Isabela State University Cauayan Campus, using Randomized Complete Block Design with three replications. The treatments included a control (T1), as well as biochar from corn cobs/ stalks (T2), coconut husk (T3), peanut shells (T4), and sugarcane bagasse (T5).

The results of the study demonstrated that the application of biochar from these agricultural waste sources significantly improved soil pH and enhanced the availability of macro and micronutrients in the soil. Compared to the control treatment, the biochar amendments resulted in increased in the length of leaves, number of leaves, tubers, and tuber weight of the carrot crop. These findings suggest that the use of biochar derived from agricultural waste can serve as an effective organic fertilizer to improve the growth and yield of carrots, providing a sustainable alternative to traditional soil management practices. The improvements in soil properties and nutrient availability contributed to the enhanced performance of the carrot crop, highlighting the potential of using biochar from various agricultural waste sources can be a promising strategy for improving the growth and yield of root crops like carrots, reducing the reliance on synthetic fertilizer and promoting sustainable agriculture.

Keywords: Growth, yield, carrot, biochar, agricultural waste

## PRODUCTIVITY OF WATERMELON (*Citrullus lanatus* L.) IN BIOCHAR-AMENDED SOIL

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The study was conducted to evaluate the performance of watermelon applied with pelletized biochar. Specifically, it aimed to determine the effect of biochar on chemical composition of the soil, determine the effect of biochar on the growth and yield of watermelon, and compute the return of investment of watermelon applied with pelletized biochar. The experiment was conducted from January 30, 2022, to April 07, 2022 at the experimental area of the Institute of Agricultural Technology, Isabela State University, Cauayan Campus, Cauayan City. The different treatments used were: T1- 20-0-0 kg NPK ha-1 (RR based on soil analysis), T2- 10-0-0 kg NPK ha-1 (1/2 RR), T3-20-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T4- 10-0-0 kg NPK ha-1 + Pelletized Biochar (3 tons/ha), T5- 3 tons Pelletized Biochar ha-1. The experiment was laid out in Randomized Complete Block Design with three replications.

The application of pelletized biochar along with inorganic fertilizer on watermelon improved the chemical properties of the soil. It increased the pH level of the soil and enhanced the availability of macro and micronutrient after it was amended with different biochar. Application of pelletized biochar along with inorganic fertilizer on watermelon production can produced optimum yield and enhanced the growth of the plants. Production of watermelon using biochar in combination with inorganic fertilizer enhanced the Return of Investment.

Based on the result of the study, the following were recommended: The application of pelletized biochar along with inorganic fertilizer was recommended because it enhanced the soil pH macro and micronutrients of the soil and produced attainable fruit yield. The pelletized biochar as organic soil amendment in combined with inorganic fertilizer was recommended because it improved the

Keywords: watermelon, biochar, soil composition, chemical properties, growth enhancement

#### Literature Review: Small-Scale Greenhouse Electroculture Hydroponic System Utilizing the Deep Flow Technique for Plant Growth Optimization

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This literature review is an analysis of the use of DFT systems into hydroponics and electro-culture for stimulating plant growth in small greenhouses and reducing the use of chemical inputs such as fertilizers. It included the investigation of the efficiency of electro-culture, as an aiding stimulus, in sustaining crop production. Essentially hybrid water-draft intakes mixed with solar energy input represent an attribute of aquaponics that assures sustainability within an urban-rural configuration of agriculture. Specifically, it discusses the various growth experiments that focus on electrically stimulating stock uptake for crop productivity and roots in hydroponic environments. When it came to growing green vegetables, DFT outperformed NFT, which supports the integration of both systems with other renewable energy sources to support the sustainability of urban-rural agriculture. Costs, technical complexity, transferability, and other issues are also present. These issues neatly contribute to the economic feedback loop, gathering different notable studies for a combination of futuristic electro-culture systems that would be considerate of the economy. Hydroponics and electro-culture are generally found to work well together in the current study as a setting for successful probiotic farming.

Keywords: Deep Flow Technique, Nutrient Film Technique, electro-culture, hydroponics

#### Literature review on the Development of an Automated Fermentation Machine for Cocoa Bean (*Theobroma cacao* L.) with Photovoltaic and Load Supply Switching System

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This literature review describes a photovoltaic (PV)-driven automated fermentation machine integrated with load supply switching for the fermentation of cocoa beans (Theobroma cacao L.) that can deliver higher production efficiency and sustainability for cocoa bean processing. While fermentation defines the quality of cocoa beans, the traditional methods suffer from manual labor and hence inconsistency of the final product. Automation in control, microbial development, and regulation of temperature and pH may standardize fermentation processes, enhance the precursors of product flavor, and promote batch-to-batch uniformity through evolving technology. The review manifests a shift in agricultural technologies that entrench renewable energy systems using PV, bringing along a dual opportunity in sustainable power generation and environmental protection. Agrivoltaics increase efficiency in land use, while automatic transfer switches work as a flawless energy management system to ensure reliability and reduction of carbon emissions.

New developments, such as effective Arduino-based controllers and real-time monitoring, offer process control improvements to conventional fermentation and post-harvest practices. Besides, modern agrivoltaics systems offer promises for efficient land use and energy optimization. However, barriers to be cleared by a re-thinking of the approach include regulations, cost issues, and standards for good practice. More work is needed to optimize microbial dynamics, advance the post-harvest technologies, and develop sustainable energy solutions that target all three variables: cost, reliability, and EV sustainability.

In general, this paper identifies the potential of the automatic fermentation machine as one that might significantly improve efficiency and consistency during cocoa bean fermentation. Not only does such a proposition for-profit production follow market demand today, but it also provides an assurance for many in the region of where cocoa is produced, concerned with the necessity for sustainable high-quality chocolate products.

**Keywords:** Photovoltaic (PV) Systems, Automated Fermentation, Cocoa Bean Processing, Agrivoltaics, Sustainable Energy Solutions
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Microplastics are small plastic particles, generally defined as being less than 5 mm in diameter, that can originate from either intentionally manufactured products or the breakdown of larger plastic debris. Nanoplastics, an even smaller category of particles, measure less than 1  $\mu$ m in diameter. These tiny fragments primarily arise from industrial processes, such as the manufacturing of textiles, plastic pellets used in production, and consumer goods like skin care products, toothpastes, and cleaning agents. These result from the degradation of larger plastic waste, including single-use plastic bottles, bags, and synthetic textiles. As these particles accumulate in the environment, the growing concern over their potential effects has intensified. Microplastics have been found to infiltrate ecosystems and enter the food chain, posing serious risks to wildlife, marine organisms, and ultimately human health.

This paper aims to explore the various sources of microplastics, their environmental impacts, and the health risks associated with their widespread presence. These include their ingestion by marine organisms, the bioaccumulation of toxic substances, and the disruption of natural food chains, as well as their contamination of soil, water, and air. Moreover, the presence of microplastics in the human body—often through oral ingestion, inhalation, and skin contact—raises alarming concerns about their potential long-term health effects. Recent studies have shown that these particles may contribute to a range of negative health outcomes, including inflammation, cellular damage, and potential links to cancer.

The paper also discusses various mitigation strategies currently being implemented, such as enhanced waste management systems, initiatives aimed at reducing plastic production and consumption, and technological advancements in microplastic detection and removal. Additionally, the role of policy measures and international agreements, such as the UN's efforts to address plastic pollution, is critically examined. These strategies are essential to curbing the growing environmental crisis posed by microplastics. In conclusion, this paper calls for a global response to microplastic pollution, urging coordinated actions that range from individual behavioral changes to comprehensive international policies that aim to mitigate the production and release of microplastics into the environment.

Keywords: microplastics, plastic pollution, waste management, mitigation, policies

## A Literature Review on the Development of an AI and IoT Enabled Garbage Filter for Sewage Canal Using Conveyor Belt System

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In the face of shocking environmental concerns ravaging our earth today, leveraging AI and IoT offers innovative solutions to mitigate issues such as urban flooding. Flooding in the Philippines is worsened by miswaste disposal and segregation, where the volume of daily wastes has risen from 40,087.45 tons in 2016 to 61,000 tons in 2023. The highest volume of waste is produced in CALABARZON, accounting for 24% of plastic waste in 2023. The urban poor are constantly victimized with blame for mismanaged wastes while systemic inefficiency and inadequacy in technological intervention serve as major causes of flooded waterways. Given the vulnerability of the country to typhoons and floods, flood control systems have to be effective and intelligent.

This literature review analyzes how an AI and IoT-enabled garbage filtration system is developed with a conveyor belt for sewage canals. The AI-based image recognition with the aid of IoT enabled sensors will continuously detect, classify, and trace waste in real time. This makes the waste segregation and removal process effective without much manual intervention and cost of operations. IoT devices also make it possible for them to track accumulation conditions continuously, which facilitates predictive maintenance and optimization of the system as a whole. As such, the study discusses the possibility for AI and IoT technologies to be applied in flood control and waste management systems. Moreover, despite these challenges of energy consumption and data integration, the review emphasizes the fact that AI and IoT can serve as transformative tools for developing scalable, adaptive, and sustainable solutions to urban environmental issues.

**Keywords:** Al and loT-enabled systems, Garbage filtration, Sewage canals, Flood prevention, Waste management

## Enhancing Convolutional Neural Networks (CNNs) Algorithm for PLMAT Application Form Verification

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This study entitled Enhancing Convolutional Neural Networks (CNNs) Algorithm for PLMAT Application Form Verification focuses on improving Convolutional Neural Networks that is utilized for PLM application form verification system. The PLMAT (Pamantasan ng Lungsod ng Maynila Admissions Test) functions as the admission examination for students aspiring to obtain an undergraduate degree at the PLM university. The University Admission Office typically conducts manual verification of the submitted application forms of examining the applicant's photograph, their signature, and their guardian. The verification process typically requires two to five days prior to applicants receiving their document review and is laborious and demands considerable time and manpower. CNN is primarily efficient in terms of memory and complexity by adapting structures to image structure while extracting and classifying. However, CNN faces a fundamental problem wherein there is an excessive gap between the error rate during testing and training that is known as overfitting. Integrating L2 and Dropout imposes penalties on large weights and improves the network's capacity to generalize novel data by mitigating dependence on training patterns. With a dataset of 750 application forms, our approach resulted an increase significant improvement of 75% in accuracy and recall, 91% in precision, and 87% in the F-1 score. These findings demonstrate the enhanced CNN's effectiveness in improving performance and robustness for document verification and classification tasks, offering a reliable solution for ensuring accuracy and consistency in document-based systems. Thus, it offers a lightweight and substantial solution for automated verification, improving the feasibility of document authentication in many applications.

Keywords: Automation, Verification, Regularization, Overfitting, Classification

Friend Kita Kahit 'Di Pa Nakikita Harapan: The formation of close platonic relationships in remote learning in college students during the COVID-19 pandemic

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During the COVID-19 pandemic, the dynamics of social relationship formation underwent significant transformations due to the predominantly online environments, particularly within school settings. This study contributes to relationship theory by analyzing how increased reliance on online communication has reshaped how students establish close platonic relationships in remote learning. These notable shifts in how relationships are formed and maintained have emerged in response to global lockdown measures thence there is limited research understanding these phenomena, especially in the educational landscape. The main objective of this study was to understand the formation of close friendships during remote learning, the factors considered when choosing a friend in this type of situation, and the meaning given to these relationships with college students in Manila. Recognizing the importance of healthy and positive relationships in the educational experiences of students, the study utilized a phenomenological qualitative approach, gathering data from five participants whose insights were thematically analyzed. Data analysis revealed three central themes: understanding and formation of platonic relationships, factors that affect relationship development, and effects of significant connection. Participants shared diverse experiences however they generally characterized platonic relationships as nonsexual interactions that embody mutual affection without romantic involvement and can parallel romantic relationships. The factors that affect relationship development include boundary setting, levels of attraction, affability, appealingness, similarities, trust, likability, social hesitance, familiarity with the environment, and organizational influences. They expressed positive reactions to their experiences and reported significant connections to the friendships they formed during remote learning and feelings of growth as people because of these relationships, which also helped them expand their connections within their respective universities. The findings indicate the presence of significant platonic relationships formed in remote learning during the COVID-19 pandemic, highlighting implications for educational practices, legal considerations, and public health initiatives.

Keywords: close platonic relationships, remote learning, platonic relationships, significant connection

## Culture Between the Pages: Examining the Role of Literature in Cultural Studies Through Two Novels

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Cultural studies have always played a pivotal role in understanding humanities and serving as the bridge that connects one culture from the other. In this regard, literature can serve as an instrument for cultural studies through literary works that exemplify culture within its contents thus allowing the reader the avenue to learn and understand culture. This study aims to prove the interconnectedness of culture and literature through two novels - Homegoing by Yaa Gyasi, an African novel on family and tradition. This historical fiction discusses the experiences of two characters during the African diaspora. On the other hand, Latin American author Laura Esquivel's novel entitled Like Water for Chocolate discusses culture heavily through food and tradition. Though a romantic novel, Esquivel maintains a balance of culture through the characters and interweaves them with historical events such as the Mexican Revolution - a decade-long internal struggle between the people against some of Porfirio Diaz' (president of Mexico) policies. This research adopts Cultural Studies as the forefront of literary criticism and analysis on the different cultural aspects present within the two aforementioned novels. The research will focus more on the presence of tradition (family relations and beliefs), correlation of history (political and historical issues found in each novel such as colonization and its influence), the social setting (the evident gap in social classes and races), the roles of the characters in serving as the medium for enacting these cultural identities, and the usage of local terminologies that proves linguistic impact on writing. All of these items are present within the two novels thus proving that literature plays a heavy role in the study of culture.

Keywords: Cultural Studies, Literature, African, Latin American, Culture

Within the Classroom Doors: Unveiling the Lived Experiences of General Education Teachers in Handling Learners with Special Educational Needs

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This study aimed to explore and understand the lived experiences of general education teachers in handling learners with special educational needs. The researcher employed qualitative research, particularly phenomenological design. The participants were purposively chosen and interviewed through focus group discussions and in-depth Interviews using a validated interview guide. Thematic analysis was employed to identify patterns of themes in the interview data. The results showed that teachers collectively experienced challenges in instructional skills, negative attitudes toward work, uncooperative parents, behavioral issues, and the responsibilities of teaching learners with special needs. An analysis of participants' responses revealed that teachers overcame challenges by self-upskilling through internet resources, demonstrating adaptability, utilizing support systems, and maintaining strong faith in God. The participants shared insights on the belief that teaching is a noble profession and the need for SPED training and seminars for non-SPED teachers.

Keywords: special education, phenomenology, Philippines

Professionalism Competence and Challenges Encountered by Social Studies Teachers of the Schools Division of Ifugao: Basis for a Professionalism Advancement Plan

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This study determined the level of professionalism competence of public secondary social studies teachers of the Schools Division of Ifugao and the challenges they encountered in teaching social studies using the descriptive-comparative design through the survey questionnaire and openended techniques. The study revealed that the teachers were highly competent in their pedagogical, personal, professional, social-emotional, and instructional skills. While there were identified aspects that needed to be improved, at this stage, they were prepared and ready to teach the learners essential knowledge and skills and the right values and behaviors, including civic competence, which is considered the major aim of social studies instruction. Age, rank or position, and highest educational attainment influenced the professional competence of teachers. The teachers identified challenges along with ICT manipulation and integration in classroom teaching, lesson planning vis-à-vis differentiated instruction, classroom management, time management, securing a safe and peaceful school environment, and instructional materials. This study concluded that the teachers had what it takes to become excellent teachers. The older teachers and those with higher ranks or positions who either finished or had units in their master's degrees were more professionally competent. The teachers were experiencing multifaceted challenges that were hindering their professionalism competence which necessitated the need for a professionalism advancement plan to further advance in their profession.

**Keywords:** Classroom management, ICT knowledge, and skills, twenty-first-century skills, social studies instruction

## The Moderating Role of Trust on the Antecedents of Usage and Acceptance on the Behavioral Intention in Using Mobile Wallet

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This study utilized predictive- correlational research design. It aimed to explain and identify the antecedents' relationship to behavioral intention in using m- wallet among working professionals in Tarlac City by applying the extended unified theory of acceptance and use of technology (UTAUT2) with the addition of trust as moderating variable. Data were gathered from a survey guestionnaires with 424 valid respondents and analyzed using partial least square- sequential equation modeling (PLS- SEM). Findings suggests that performance expectancy, social influence, facilitating conditions, price value and habit had a significant relationship to behavioral intention. Among the significant constructs, performance expectancy, facilitating conditions and habit had the strongest influence with probability level of less than .001. In contrast, hedonic motivation and effort expectancy with a probability level of greater than .05, had no significant relationship with behavioral intention. On the investigation of trust as moderating variable, the result indicated that trust significantly moderates the respective relationship of performance expectancy, effort expectancy and habit with behavioral intention. With the use of linear slope analysis, the results revealed that the relationship between the mentioned antecedents and intention to use mobile wallet weakened with elevated level of trust. Meanwhile, the study demonstrated no significant moderating effects of trust on social influence, facilitating conditions, hedonic motivation, and price value on their corresponding relationship with behavioral intention. It was recommended for m- wallet owners and developers to continuously enhance the m- wallets functions and features and update its security measures to assure users they can conduct different financial transactions confidently

Keywords: Behavioral Intention, Cashless Transactions, Digital Wallet, Mobile Wallet, UTAUT2

## PERSONALITY TRAITS, SELF-CONTROL AND FINANCIAL BEHAVIOR OF POLICYHOLDERS IN TARLAC

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The study sought to explore relationship of personality traits, self-control and financial behavior among the 302 policyholders in Tarlac using a descriptive-correlational research design. The research utilized a survey questionnaire to gather data on the Big Five Personality Traits (Openness to experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism). The results show that the policyholders are found to be open to experience ( $\bar{x} = 3.63$ ), conscientious ( $\bar{x} = 3.71$ ), and agreeable ( $\bar{x} = 3.90$ ). While policyholders are found to be curious and open minded, responsible and punctual, and highly sensitive to the feelings of others, they seemed to be uncertain to be extravert and neurotic.

The self-control of policyholders was assessed to be low ( $\bar{x} = 3.09$ ). While there are factors that the participants are seemed to be high in self-control, overall, the mean was low. On the other hand, the policyholders appeared to agree to practicing a good financial behavior ( $\bar{x} = 3.81$ ).

Further analysis using multiple linear regression revealed that openness to the experience and the conscientiousness had a significant influence on financial behavior. Self-control, in general, was also found to be significant predictor of financial behavior.

When personality traits and self-control combined, the results consistently revealed that openness to experience and conscientiousness are effective predictors of financial behavior. Hence, policyholders' financial behavior in Tarlac is also influenced by some personality traits and self-control.

Higher openness to experience and conscientiousness can be expected to have a better financial behavior. The result suggest for financial education programs and policy interventions meant for the enhancement of decision-making on money matters among people.

By recognizing the influence of personality traits and self-control, financial professionals can develop more effective strategies to promote financial literacy, encourage sound financial practices, and enhance the financial well-being of the clients.

Keywords: Personality Traits, Self-Control, Financial Behavior, Policyholders, Multiple Linear Regression

## FINANCIAL STRESS AND WELL-BEING AMONG LOCAL GOVERNMENT EMPLOYEES OF TAYABAS CITY, QUEZON PROVINCE

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Financial stress is a key factor in determining the financial well-being of employees and providing initiatives within the workplace. This study aimed to determine the financial stress and financial well-being among local government employees of Tayabas City. Specifically, it sought to identify the profile of the respondents, their level of financial stress and financial well-being, relationship between financial stress and financial well-being, and the differences on financial stress and financial well-being when grouped according to profile as well as to propose a booklet that may benefit the respondents. Employing a descriptive-correlation design, the researchers used a modified-unstructured survey-questionnaire to gather data. Findings revealed that the local government employees were mostly single women aged 20-29 years old, permanently employed, and with 4-6 household members. Also, most of them were ranked and filed with a monthly income of Php10,000 to Php20,000. The study revealed that the local government employees had low level of financial stress in terms of affective reaction, relational behavior, and physiological response. Conversely, they perceived high financial well-being in control over finances, withstanding financial shock, financial goals, and financial freedom. Further, a positive correlation was found between financial stress and financial well-being, being statistically significant at 0.01 level. Meanwhile, there were significant differences in financial stress and financial well-being across employment status and monthly income. The study showed that employees have difficulty in managing their finances in terms of budgeting. Therefore, the researchers proposed a booklet on employee financial well-being enhancement addressing the preceding problems.

Keywords: financial stress, financial well-being, local government employees

## Professional and Academic Outcomes of PhD Graduates in Research and Evaluation: Insights from a Tracer Study

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This tracer study tracked the professional and academic outcomes of the Doctor of Philosophy in Education, major in Research and Evaluation (PhD RE) in a state university in Central Visayas, Philippines, assessing how well the program prepared graduates for positions at the advanced levels of leadership, education, and research. Online surveys and open-ended questionnaires were used to collect data from ten graduates and their employers using a mixed-methods approach. The results showed that the graduates are strong in research, teaching, and leadership, and most stated that they pursued the degree primarily for the opportunity to develop their careers. Employers praised their critical thinking and initiative in their performance evaluations. According to the study's findings, graduates of the PhD RE program are effectively prepared for essential positions in various educational settings. To improve research competencies and professional development, increasing mentoring and multidisciplinary cooperation is crucial in graduate education.

Keywords: PhD, research and evaluation, tracer study

# Investment behavior and decision-making: Building a financial guide for cooperative sector employees in Quezon Province

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Exploring what drives cooperative employees in Quezon Province to invest reveals insights into the influences shaping their financial decisions. The study found that these employees are primarily middle-aged, female, married, and college-educated, with a typical household size of 4-6 members. Earning between ₱10,001 and ₱20,000 per month, most employees invest in insurance as a protective measure against financial risks, with the majority spending ₱18,000 or less annually. The investment experience averages less than three years, and income from investments ranges from ₱20,000 to ₱30,000 annually, indicating they are novice investors. Key influences on their investment behavior include personality, socioeconomic surroundings, beliefs, and myths. Among these, personality had the most substantial impact, showing a strong correlation with risk tolerance and openness to new investment opportunities. Financial literacy emerged as the most significant factor in investment decisions, as employees understand concepts like the time value of money, enabling them to make informed choices on when to invest. Trends had a lesser influence, as employees often seek external advice before engaging in popular investment options. Significant relationships were identified between investment behavior and decisions, particularly in terms of financial literacy and trend considerations. The study concluded with a proposed financial guide tailored to align with employees' personalities, helping them overcome challenges such as financial constraints and limited knowledge. This personalized approach empowers employees to make informed investment choices suited to their risk tolerance and openness to new opportunities, ultimately supporting them in reaching their financial goals.

**Keywords:** *investment behavior, investment decisions, financial guide, financial trends, personality* 

## EXPERIENCES OF EMPLOYEES WITH PAPER-BASED CASE PROCEEDINGS OF A LABOR RELATIONS AGENCY

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The reliance on a paper-based approach for case proceedings in Division A significantly hinders the efficient and effective resolution of cases. To delve deeper into the workflow dynamics in the LRA - Division A, the researcher conducted a thorough observation of the current process and employed a survey focusing on Case Proceedings, Workloads, Technological Resources, Trainings and Process Initiatives. Additionally, the researcher gathered narratives from employees and clients to gain insights into stakeholder perspective. For this study, the researcher used total population sampling for the employee survey and interviews, and purposive-convenience sampling for the clients' in-depth interviews. Quantitative data were analyzed using descriptive statistics and qualitative data from interviews were analyzed thematically. Senior personnel's who have been in service with the agency for more than 25 years assertively refuse the idea of changing the proceedings. Despite the resistance from older employees, the influx of younger staff, who are more familiar with the latest technological advancements, is challenging the status quo. While the survey findings indicate that the agency's current paper-based system is manageable in terms of workload, there are concerns about efficiency and mobility. Based on the findings of this research, it is evident that the agency is lagging behind in adopting digital technologies, relying heavily on a paper-based approach for its operations. Key proposals include upgrading outdated computers to improve efficiency, productivity, and boost employee morale, and, gradually transition to e-filing by allowing the submission of pleadings, motions, and other documents via electronic mail.

**Keywords:** Case Proceedings, Workloads, Technological Resources, Trainings and Process Initiatives, Paper-Based Proceedings

## Roadblocks to Success: Examining the Resources and Performance of MSMEs in Misamis Oriental

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This study examined the resources and performance of micro, small, and medium-sized enterprises (MSMEs) in Misamis Oriental. Specifically, this study investigated the impact of tangible, intangible, and external resources on the financial and non-financial performance of MSMEs in the municipalities of Manticao, Lugait, and Naawan (ManLuNa). Data from 266 MSMEs were analyzed to assess the extent to which these resources were utilized and their subsequent effects on MSME performance. Findings indicated that MSMEs effectively utilized tangible resources, particularly in inventory management and maintaining physical assets, but underutilized machinery and equipment. Although financial resources were generally well-managed, investment in human capital was notably low, revealing a significant gap in employee training and development. Intangible resources, such as brand reputation, were effectively leveraged by MSMEs, indicating their recognition of the value of maintaining a positive public image to attract customers and build loyalty. However, organizational culture, which plays a critical role in fostering employee satisfaction, collaboration, and innovation, was not fully appreciated or prioritized. While MSMEs capitalized on supplier relationships, their limited engagement with government programs and business partnerships restricted growth potential. On the other hand, performance analysis from 2021 to 2023 revealed sluggish recovery from COVID-19, with marginal improvements in financial and non-financial metrics. The study identified statistically significant relationships between MSME performance and all resource categories, with tangible resources exerting the most substantial positive impact, followed by external resources. Intangible resources, while positively associated with performance, did not achieve statistical significance, suggesting their influence may manifest over longer periods or under specific conditions. The study concludes that resource utilization strategies must be optimized, particularly through investments in employee training, fostering strategic partnerships, and enhancing engagement with government programs.

Keywords: MSME Performance, Tangible Resources, Intangible Resources, External Resources

## Exploring Synchronous Online Class Challenges in the Post-New-Normal Era: A DEMATEL and Pareto-Based Quality Management Analysis

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The post-new-normal era has maintained the prevalence of online learning, particularly in graduate studies and higher education, which transitioned to digital platforms during the COVID-19 pandemic. This study provides a quality management analysis of the challenges encountered in synchronous online classes, utilizing descriptive statistics, Pareto analysis, and Decision-Making Trial and Evaluation Laboratory (DEMATEL). Data were collected through online surveys that captured students' demographic profiles, internet connectivity levels, platform preferences, and financial constraints. Pareto analysis revealed that technical difficulties, content-related issues, and lack of motivation were the most significant challenges, with technical difficulties cited by 18.86% of respondents as the most critical issue. Other root causes included unstable internet connections, lack of technical equipment, and environmental distractions, which led to consequences such as poor interaction, isolation, short attention spans, and low engagement in classes. DEMATEL analysis further highlighted the causal relationships among these factors, identifying technical difficulties and distractions as primary root causes that significantly influenced other challenges. The study also uncovered financial constraints, with 57.25% of respondents spending less than ₱500 monthly on internet connectivity, limiting access to stable online sessions. Moreover, 59.75% of respondents reported moderate internet speeds (11-50 Mbps), underscoring the need for reliable digital infrastructure. Google Meet emerged as the most preferred platform, chosen by 71.75% of respondents, emphasizing the importance of efficient and user-friendly tools for online learning. The findings suggest that improving technical infrastructure, addressing motivational factors, and enhancing student engagement are crucial to improving the quality of synchronous online education. Educational institutions should prioritize refining content delivery, offering technical support, and mitigating environmental factors to create more effective and engaging learning environments. By focusing on these areas, quality management strategies can significantly enhance the overall online learning experience in the post -new-normal era.

**Keywords:** Synchronous Online Classes, Post-New-Normal Era, Quality Management Analysis, DEMATEL, Pareto Analysis

## Acceptability of Instructional Prototype Power Generator and Students' Capability and Performance

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The acceptability of instructional prototype power generator and students' capability and performance designed and constructed by the researcher as supplemental for laboratory instruction was an aid for the students taking courses requiring skills to further understand how it is done in producing electrical power output using generator set run by a primary mover utilizing 3 horse power electric motor and other accessories for clear instruction. The respondents of this study were 30 senior high school students of Capiz National High School and 2 teachers, 42 senior high school students of Congressman Ramon A. Arnaldo High School and 4 teachers, 36 senior high school students of Roxas City School for Philippine Craftsmen and 1 teacher. A total of 108 student participants. The researcher used the descriptive correlational method. A survey questionnaire made up of 4 sets in gathering the data for the students was used. Mean was used to measure the capability, performance, instructional competency of students' responses. Pearson r was used to determine the relationship between the instructional competency of the trainer and capability level of the students, instructional competency of the device and performance level of the students. The capability of the students to set-up the prototype power generator trainer was very capable to measure current drawn of loading electric drill and angle grinder. The performance level of students in measuring generated voltage, speed (RPM) and frequency expressed in hertz was very high, indicating that the prototype power generation was able to produce the required voltage, speed and frequency to run the electric drill and angle grinder. The instructional competency of the power generator for laboratory instruction was very acceptable as teaching aid in the delivery of learning. The precautionary measures before utilizing the power generator was consistently observed and followed by the students, that is to ensure safe use of the students when doing laboratory instruction. There was no significant relationship between instructional competency and capability level of students in terms of measuring current drawn of loading electric drill and angle grinder. On the other hand, there was a significant relationship between instructional competency and performance level of students in terms of measuring generated voltage, speed (RPM) and frequency (Hertz).

**Keywords:** Acceptability, instructional prototype power generator, capability, performance, laboratory instruction

## Validation of Selected Organic Fertilizer in Enhancing Upland Rice Production

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The rising cost of farm inputs (fertilizers) results higher production expenses in rice farming, thus meeting the country's growing demand for food is at stake due to lack of capital for production. Philippines agriculture department pinned several strategies to boost rice production through new varieties and mechanization to secure food sufficiency. To contribute on boosting rice production this study was encapsulated, evaluating the efficacy of different organic fertilizers on agronomic, yield, and yield components of rice (NSIC Rc 27) was the objective. A completely randomized block design was used in the study (RCBD) with eight (8) treatments: T1 - Farmers practice (No Application), T2 – Recommended Rate of Fertilizers, T3 – Bacillus amyloliquefaciens alone, T4 – Carrageenan alone, T5 - Carbonized Rice Hull + Bacillus amyloliquefaciens, T6 - Bacillus amyloliquefaciens + Kappaphycus, T7 - 50% RRF + Bacillus amyloliquefaciens + Carrageenan and T8 - 50 % RRF + Bacillus amyloliquefaciens and replicated thrice in a 4m x 5m standard size with a total area of 646m2. The research was carried out at Davao de Oro State College's research laboratory at Compostela, Davao de Oro. Agronomic parameters, meteorological data, yield and yield components, and economic analysis were collected. The results confirmed that using various organic fertilizers increased upland rice production by up to 3.9 tons per hectare. On the other hand, soil conditioner and soil inoculant like carbonized rice hull (CRH) and Bacillus spp could improve soil health by increasing organic matter resulting to better absorption of nutrients correlating to higher production.

Keywords: food security, Bacillus amyloliquefaciens, Carrageenan, Carbonized Rice Hull (CRH), Kappaphycus drippings

## Jason T, Bordas, Rogelio A. Coco Jr., Lebi John G. Gerona, Leith P. Ojad, Lorenz P. Superales, and **Raymart Bulagsac**

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The Civil Engineering Licensure Examination (CELE) is a professional assessment that measures the proficiency and eligibility of the examinees to practice the civil engineering profession in the Philippines. Consequently, the performance of the licensure examinees measures the quality of civil engineering education offered in a Higher Educational Institution (HEI), such as the Southern Leyte State University (SLSU). However, the performance of civil engineering graduates of SLSU is yet to be analyzed and no studies were conducted related to this endeavor. This quantitative research aimed to comprehensively assess the performance and proficiency of the institution's civil engineering licensure examinees in the CELE from November 2016 to May 2022. This study determined the examinees' demographic profile and analyzed the performance of both male and female first time and repeater examinees in the three licensure examination subjects using descriptive statistics. Results showed that Hydraulics and Principles of Geotechnical Engineering (HPGE) subject maintained a largely constant trend, with consistently high evaluations, especially among male candidates and first-time takers. Principles of PSAD, on the other hand, had the highest performance variability, with scores varying in all categories. This study provides valuable insights into the strengths and areas for improvement in SLSU's civil engineering program, highlighting the institution's achievements while identifying challenges in licensure examination performance. Such findings can guide the enhancement of academic strategies and contribute to the sustained development of civil engineering education at SLSU.

**Keywords:** Civil engineering licensure examination; Licensure examination performance; Institutional passing percentage; National passing percentage; Civil engineering curriculum

## Utilization of Banana Stem Fiber and Cornhusk Fiber with Starch Binder as an Insulation Board

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The growing interest in green and sustainable building materials has driven innovation in ecofriendly insulation solutions. Insulation boards derived from banana stem fibers (BSF) have emerged as a promising thermal insulator, offering environmental sustainability. However, concerns regarding water resistance and durability limit their broader application. This experimental study aims to enhance the water resistance and durability of BSF insulation boards by incorporating varying percentages (0%, 15%, 25%, and 35%) of corn husk fiber (CHF) with starch as the binder. Mechanical and water absorption properties were evaluated using ASTM Standard C203 (Breaking Load and Flexural Properties of Block-Type Thermal Insulation) and ASTM C1794-15 (Determination of the Water Absorption Coefficient by Partial Immersion), alongside temperature control testing. The results revealed significant differences among the samples, with the B65C35 composition demonstrating superior performance. It achieved the highest flexural strength (1721.45 psi), lowest water absorption (0.0629 after 4 hours, 0.0312 after 24 hours), and optimal temperature regulation. The study concludes that incorporating CHF into BSF insulation boards with cornstarch binder significantly enhances physical and mechanical properties, particularly flexural strength and water resistance, while maintaining efficient thermal conductivity. This highlights a viable approach for reinforcing sustainable thermal insulation solutions in construction.

**Keywords:** Insulation Board, Banana Stem Fiber, Cornhusk Fiber, Moisture Absorption, Moistureresistance, Experimental

## **Evaluation of the Thermal Performance of Three-Storey Building at Sogod National High School, Southern Leyte, Philippines, Using Building Simulation Techniques**

### Jerome T. Batle, Skinley R. Biasora, Julliane D. Dizon, and Limon C. Moral

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The study evaluates the thermal performance of a three-story classroom building at Sogod National High School, Southern Leyte, Philippines, focusing on natural ventilation's effectiveness. The problem addressed centers on the challenge of achieving thermal comfort in classrooms amid the Philippines' tropical climate and rising global temperatures. The primary objectives included assessing current classroom designs based on operative temperature, air velocity, and the Predicted Percentage of Dissatisfaction (PPD), utilizing Integrated Environmental Solutions Virtual Environment (IES-VE) for computer modeling and simulation.

Findings revealed that while natural ventilation maintained average operative temperatures within acceptable ranges set by ASHRAE 55–2017 guidelines, air velocities largely failed to meet the required threshold of 0.8 m/s throughout the year, except in March. Additionally, the PPD exceeded the desirable limit of 20%, indicating significant occupant discomfort. PPD levels peaked during the summer months, with dissatisfaction affecting up to 76.54% of occupants in May. The study highlights a critical gap in providing thermal comfort, despite adequate ventilation rates.

The conclusion emphasizes the inadequacy of natural ventilation alone in ensuring thermal comfort. Recommendations include retrofitting classroom designs with enhanced ventilation strategies, incorporating HVAC systems, and conducting further on-site analyses to validate simulation results. These findings underscore the necessity for targeted interventions to create sustainable, comfortable learning environments aligned with global and local standards.

Keywords: Ventilation, Thermal Comfort, Computer Modelling and Simulation

## DEVELOPMENT OF A RAINWATER FILTRATION SYSTEM USING LOCALLY SOURCED MATERIALS

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The global emphasis on water conservation, including water-saving technologies and education on water sustainability, is critical to achieving the goal of halving the population lacking access to water and sanitation by 2025. Rainwater supplementation offers a promising solution to alleviate water shortages. Filtration systems play a vital role in water treatment by removing suspended particles, microorganisms, and dissolved contaminants. However, advancements are necessary to address evolving water treatment needs, reduce maintenance costs, and minimize environmental impact. This study introduces the design and fabrication of a Rainwater Filtration System (PFS) and evaluates its performance, focusing on filtration rate and water quality. The system utilizes abaca fibers with varying thicknesses tested across three locations. Results demonstrate that abaca fiber thickness significantly affects the filtration rate, with thicker fibers reducing efficiency. While the filtration process slightly lowered the pH of rainwater, it remained within a moderately alkaline range. A comparative analysis revealed an inverse relationship between fiber thickness and filtration rate across all locations, with consistent pH values observed. Statistical analysis using two-way ANOVA confirmed the significant impact of fiber thickness on filtration rate but found no significant differences in pH among locations. This study highlights the potential of rainwater filtration systems using locally sourced, sustainable materials to address water scarcity, promote environmental conservation, and improve community resilience.

Keywords: water quality, filtration rate, cost-effective, Ph test, one-way ANOVA

## Evaluating the Efficiency of Bypass Road in Minimizing Traffic Congestion, Accidents, and Travel Time In Baybay City, Philippines

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This study evaluates the efficiency of the Baybay City bypass road in minimizing traffic congestion, reducing road accidents, and improving travel time. The research employed a descriptive quantitative approach, utilizing t-tests and ANOVA to analyze pre- and post-implementation data on traffic congestion, accident rates, and travel time. Data were gathered through manual video transcription, accident records from the Philippine National Police, and statistical analysis. Results indicated significant reductions in traffic congestion for most vehicle types, with jeeps, buses, tricycles, cars, and motorcycles showing notable improvements. However, trucks displayed no significant change. Accident rates significantly decreased post-implementation, with private vehicles and motorcycles identified as the most accident-prone types. Conversely, travel time analysis revealed no statistically significant differences between the main road and the bypass road (f = 5.322, p = 0.171). These findings suggest that while the bypass road effectively alleviates congestion and enhances road safety, its impact on travel time efficiency remains limited, potentially due to external factors such as road design and driver behavior. This research highlights the importance of bypass roads in improving urban transportation systems while emphasizing the need for further investigation into travel time determinants to maximize the road's utility.

**Keywords:** Bypass Road Evaluation, Bypass Road Efficiency, Bypass Roads, Traffic Congestion, Road Accidents, Travel Time

## Effectiveness of Corn Cob Ash and Bamboo Leaf Ash as Stabilizing Agents on Engineering Properties of Clay Soil

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Clay soil presents challenges in geotechnical engineering, requiring effective soil stabilization techniques. Environmentally friendly alternatives like corn cob ash and bamboo leaf ash have shown promising results as stabilizers. However, corn cob ash generally exhibits lower pozzolanic activity than bamboo leaf ash. Thus, combining the corn cob ash to bamboo leaf ash can potentially enhance the pozzolanic activity of bamboo leaf ash resulting to a stronger and more durable stabilized product. This study seeks to build on these findings by performing laboratory experiments to synthesize the soil sample with variable ratios (1:3, 1:1, 3:1) of corn cob ash and bamboo leaf ash respectively to evaluate the changes in the geotechnical properties such as the shear and bearing strength, compaction characteristics, and Atterberg limits of clay soil in accordance with the various ASTM standards. The statistical analysis will employ a one-way ANOVA tool to examine the data. Results show that 3:1 BLA to CCA ratio, especially at 15% stabilizer content, significantly reduced plastic limit to 22.64%, enhancing soil workability and stability. The Standard Proctor Test revealed that stabilizer ratios influenced optimal moisture content (OMC), with small amounts of stabilizer reducing OMC and higher amounts increasing it. The California Bearing Ratio tests showed significant improvements in soil strength, 3:1 BLA to CCA ratio at 15% stabilizer content outperforming control samples. The study found significant differences in CBR values between groups, with p-values less than 0.05, rejecting the null hypothesis. Hence, the study underscores the potential of corn cob ash and bamboo leaf ash as sustainable, cost-effective stabilizing agents, leveraging natural and recycled materials to improve

Keywords: corn cob ash, bamboo leaf ash, clay soil, geotechnical engineering properties, stabilizing agents

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Data is a crucial asset for organizations in the modern digital age. Companies rely on information at every stage of their decision-making process. However, with the increasing importance of data comes a rise in threats to its security and integrity. These threats can be unplanned, such as software or hardware failures, natural disasters, or human errors. To address these risks, regular backups are essential. While data recovery systems may function as intended, there is another challenge that often goes overlooked: determining where to restore the data, the infrastructure that will host the system. It is also known that backup strategies are expensive due to data needing to be replicated multiple times, therefore increasing the storage requirements, up to double of what is usually required.

In this study, the researcher addresses the problem of ensuring data recovery and business continuity amidst these threats by exploring the integration of cloud-based disaster recovery strategies—Backup and Restore, Pilot Light, and Warm Standby—with Infrastructure-as-Code (IaC). Infrastructure as code can be used to automate backup processes and ensure the reliability and availability of services by recording the infrastructure, including the network subnets, route tables, databases, operating system, load balancers, and virtual machines as programming codes rather than relying with just application backup and provisioning the infrastructure via click ops.

This approach aims to reduce the risk of data loss and enable businesses to recover easily in case their main systems go offline due to catastrophes such as ransomware attacks. By leveraging IaC alongside cloud-based backup strategies, organizations can enhance their ability to protect critical data and ensure business continuity in challenging scenarios.

Using these approaches, the study simulated backup restoration processes to measure Recovery Point Objective (RPO) and Recovery Time Objective (RTO) metrics, comparing click ops and automated recovery processes facilitated by IaC tools like Terraform. The backup strategy with the lowest RPO and RTO is preferred for backup strategies, however this also entails higher costs for organizations.

Key findings revealed that IaC dramatically reduced RTO across all strategies, with the Warm Standby strategy achieving the lowest RTO (<2 minutes) but at the highest cost. In contrast, the Backup and Restore strategy proved cost-efficient but resulted in significantly higher RTO values. Pilot Light offered a balanced solution with moderate RTO and cost. The study concluded that IaC integration enhances recovery efficiency, and while Warm Standby is ideal for minimizing downtime for threats such as ransomware attacks, Pilot Light is a practical alternative for budgett-

Keywords: Backup Strategies, Business Continuity, Cloud Computing, Disaster Recovery, Infrastructure-as-Code

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One of the common problems encountered by tiger grass farmers are the absence of processing technology for tiger grass. It is a clear indication for an intervention through technology development to minimize the extensive labor in Tahiti broom production. It is an objective of the study to design, fabricate, and evaluate performance a motorized tiger grass pollen remover machine with Quadra Cylindrical pollen roller assembly opposing to each other and stalk holder mechanism. The pollen remover machine was tested with the actual performance for ten trials with different power speed of the motor. The tiger grass pollen remover machine was able to operate efficiently and effectively within the expected timeframe for 900 bundles per hour, minimize damage for an average detached of 15.71 cm of the tiger grass tips, and attained the objective of having characteristics of convenience and easy to operate.

Keywords: Portable Grating Tool, Mechanical Grating Plate Changer, DDOSC

## A Cloud Based Predictive Water Level and Real Time Monitoring System of Oriental Mindoro's rivers with Mobile Application

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Flooding caused by river overflow due to heavy rainfall or typhoons is a recurring and devastating problem for lowland communities and those near rivers, particularly in the Philippines. The relationship between rainfall intensity and water levels at river monitoring stations directly influences discharge volumes, making rainfall a key factor in flood occurrences. Flooding leads to significant immediate impacts, including loss of life, property damage, destruction of crops, livestock losses, and health risks from waterborne diseases. Despite various government and nongovernment initiatives aimed at improving flood monitoring and early warning systems, flash floods continue to threaten vulnerable communities. Real-time monitoring of river water levels, combined with timely advisories, is crucial for reducing flood risks. Current flood monitoring technologies, such as ultrasonic sensors, automated rain gauges, and water level monitoring systems (WLMS), provide essential data but fall short in delivering detailed, minute-by-minute data and direct community alerts. This study proposes the development of a cloud-based, real-time water level monitoring and predictive system for rivers in Oriental Mindoro. The system will integrate Arduinobased ultrasonic sensors, a web server for data processing, and a mobile application to deliver accurate water level readings and immediate alerts to local communities. This innovative approach aims to enhance flood preparedness, improve response times, and ultimately reduce the impacts of flooding in vulnerable riverine areas.

Keywords: cloud-based, arduino, sensor, floods, mobile app

## **Project Better Health for Women's Training Needs Assessment: Basis for Proposed Training Design**

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Using the purposive sampling and total enumeration, the respondents are the 24 Barangay Health Workers (BHWs) of Barangay Natividad, Pilar, Capiz. Project Better Health for Women is an extension project that seeks to offer a holistic and sustainable impact on the lives of BHWs by providing skills and livelihood training. This study attempted to determine the training needs of beneficiaries as basis in proposing training designs for Project Better Health for Women. Specifically, it aimed to determine the profile of beneficiaries in terms of age, occupation, and educational attainment; and determine the training needs of beneficiaries in terms of livelihood, education and humanities, and for community/barangay need. A descriptive survey was used to determine the training needs of the beneficiaries. The statistical tools used are frequency, percentage, and rank. Majority of the respondents are high school graduate, housewives and belong to age 44 years old and below. For livelihood aspect, they need training on bangus in Spanish-style, soap making, and beauty care. These skills are practical, providing opportunities for income generation and economic empowerment. For education and humanities aspect, they need training on health education, first aid, hygiene, and financial literacy. Health education, first aid, and hygiene training are important to the BHWs, as they contribute to promoting public health within their communities. Financial literacy, on the other hand, is crucial for personal development, allowing beneficiaries to manage resources well. For the aspect of community need, they prefer to have need training on disaster preparedness. The strong emphasis on disaster preparedness training emphasizes a proactive approach to community safety and resilience. The study concludes that tailored proposed training designs addressing these needs can enhance the competencies of BHWs, supporting them to deliver effective community health care services, and helping them to improve their economic status.

Keywords: Barangay Health Workers, Community Extension, Community Need

## ASSESSMENT OF STRESS-RELATED ISSUES OF SELECTED PE STUDENTS AND THEIR WELL-BEING

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This study, titled "Assessment of Stress-Related Issues of Selected PE Students and Their Wellbeing," investigates the experiences and challenges faced by students in a physical education academic setting, focusing on how demographic factors such as age, gender, and academic progression influence stress and well-being. A comprehensive survey of physical education (PE) student-respondents reveals a strong, unified approach to managing stress across physical, mental, and emotional dimensions, indicating a proactive stance toward stress-related issues in both academic and personal contexts. The findings demonstrate robust well-being among the respondents, with high ratings in social support, physical health, mental clarity, and emotional stability, predominantly falling within the 'Strongly Agree' range.

Interestingly, the study finds no significant differences in stress-related issues and most well-being aspects across demographic profiles, with the exception of social well-being, which shows variance by sex. The correlations between various aspects of well-being and stress-related issues vary, with some being significant and others negligible, indicating a nuanced and complex relationship between these variables.

Based on these insights, the researchers propose a stress management plan tailored to address stress-related issues and enhance well-being among PE students. This intervention emphasizes social support and mindfulness-based cognitive therapy, with specific adjustments according to sex. The proposed plan aims to mitigate stress and promote overall well-being, thereby fostering a healthier academic and personal life for the students.

**Keywords:** Physical Education Students, Stress Management, Well-being, Social Support, Mindfulness-Based, Cognitive Therapy

## TRANSVERSAL COMPETENCIES OF BS IN ENTREPRENEURSHIP GRADUATES: BASIS FOR INTERVENTION PLAN

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Given the hyper-competition in the professional working environment, there is a need to assess and evaluate competencies of the workforce. This study assessed the profile of BS in Entrepreneurship alumni and their perceptions of their transversal competencies. To gather necessary data, it utilized survey questionnaire and informal interviews. The study found out that in terms of transversal competencies in general, they were excellent in critical and innovative thinking skills, interpersonal skills, intrapersonal skills, media and information literacy, and global citizenship. On the other hand, they need to improve specifically on the following: creativity, communication skills, organizational skills, and sociability and collegiality, self-discipline, flexibility and adaptability, and self-awareness, self-discipline, flexibility and adaptability, and selfawareness, ability to obtain and analyze information through ICT, and democratic participation. Based on the findings, an intervention plan was crafted which may be used by the BS in Entrepreneurship Department to improve transversal competencies of students.

**Keywords:** Transversal competencies, critical and innovative thinking, interpersonal skills, intrapersonal skills, media and information literacy, and global citizenship

### INSTITUTIONAL TRANSFORMATION: ASSESSMENT OF BEST PRACTICES IN QUALITY MANAGAMENT SYSTEMS IN GOOD SAMARITAN COLLEGES

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The significance of institutional transformation in higher education draws attention to how improving stakeholder satisfaction and operational efficiency may be achieved through implementing Quality Management Systems (QMS) and best practices.

The study uses a quantitative research approach to examine Good Samaritan Colleges' (GSC) Quality Management Systems (QMS) and institutional transformation. Senior administrators, administrative employees, and faculty members with relevant training and experience make up the participants, who were selected using purposive sampling. The main tool for acquiring data was a survey questionnaire that was created with assistance from a statistician and researcher adviser. Likert-scale and open-ended items were included in the questionnaire to gather data on a variety of institutional change, QMS, and stakeholder perceptions topics.

Respondents highlight the importance of robust QMS procedures across all departments and identify key areas for improvement. Regular internal audits are essential for evaluating compliance with best practices and identifying areas for improvement, ensuring the continual enhancement and consistent application of quality management practices. Developing a charter diagram and process flow improves transparency and stakeholder engagement by visually representing transaction flows, aligning with organizational goals, and facilitating informed decision-making. Fostering a culture of excellence that values continuous improvement and adherence to best practices leads to more consistent and effective implementation.

**Keywords:** stakeholders' satisfaction, quality management system, internal audits, institutional transformation

Messenger Emojis: Unveiling the Intended Meanings and Contributions of the Most Used Emojis in "Somerado Descendants" Group Chat

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In computer-mediated communication, "graphicons" which include emojis have been considered as online visual communicative elements. Particularly in the use of Messenger, emojis have been a big part of every conversation. This is why the researchers aimed to understand the role of emojis in digital conversations within a family context. This study utilized a qualitative research design and netnography approach, focusing on the use of emojis of the "Somerado Descendants" group chat. The researchers analyzed the frequency of emoji usage over a six-month period from May to October 2024 and conducted a survey with 20 members of the group chat to understand their perceived meanings of the most used emojis in comparison to its meaning based on emojipedia. Additionally, the study seeks to find the contribution of the emojis to the overall dynamic of the group. The findings of the study reveal that the top five most emojis are the red heart, laughing face with squinting eyes, crying laugh, thumbs up, and crying face. The analysis highlights that while these emojis have generally accepted meanings, the respondents' interpretations can vary among them, demonstrating contextual and individual nature of emoji usage. The study concludes that the type of commonly used emojis in a group chat can serve as a strong indicator of the nature of the group itself. Also, emojis may have general accepted meaning but they can be used and perceived differently which can be affected by different factors. Finally, emojis are a useful tool for making up for the shortcomings of nonverbal cues in online communication, which eventually leads to more engaging and productive communication in group chat settings.

Keywords: Computer-mediated communication, Messenger, emojis, netnography, group chat

## AN EVALUATION OF THE STUDENTS' SERVICE-LEARNING EXPERIENCES: BASIS FOR AN INTERDISCIPLINARY CURRICULUM MODEL

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This study evaluates the service-learning experiences of 39 doctorate students enrolled in EDMA 604 at Tarlac State University's Graduate Studies, Philippines, during the 2019–2020 academic year. Through a descriptive-evaluative and qualitative approach, the study explores the benefits, challenges, and insights derived from their participation in a community outreach project. Using thematic and narrative analysis of student reflections and interviews, the research identifies key themes such as synergy between theory and practice, addressing real-life problems, personal growth, leadership development, and evolving perspectives on community roles.

The findings reveal that while the students gained critical skills and socio-civic awareness, they encountered challenges related to time constraints, limited partnerships, and logistical hurdles. The study emphasizes the transformative impact of structured service-learning activities on academic and professional development. Furthermore, it underscores the value of integrating community engagement into doctoral education as a sustainable pedagogical model.

The research culminates in the proposal of an Interdisciplinary Curriculum Model for the Doctor of Education program, aiming to formalize service-learning as an essential component of graduatelevel education. This model seeks to enhance students' leadership skills, deepen their understanding of social accountability, and foster collaboration across multiple disciplines. These insights provide a framework for improving service-learning implementation and promoting holistic graduate education.

Keywords: service learning, community participation, curriculum model, evaluation, outreach project

## Awareness, Acceptance and Perception of Capiz State University Stakeholders towards its Vision, Mission, Goals and Objectives

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The organization's vision, mission, goals and objectives are very vital. It stands as the basis of all the programs, activities and development. In order for everyone in the organization to work on a common goal, these vision, mission and goals should be known and accepted by its stakeholders. This descriptive study determined the level of awareness and acceptance of VMGO by its internal and external stakeholders of Capiz State University Sigma Satellite College from November 2020 to March 2021. Similarly, it aimed to find out the respondents' level of acceptance as well as the VMGO's clarity and consistency with the school's educational practices. It adapted the questionnaire of Castillo (2014). Respondents were classed as either internal or external. For internal stakeholders like faculty and administrative personnel, the whole population was utilized while stratified random sampling was used for student respondents. Snowball sampling was used to identify the external stakeholders like alumni and parent respondents while purposive sampling was utilized for cooperating/partner agencies. Findings reveal that stakeholders were highly aware of the University's vision, mission, goals and objectives. Furthermore, they perceived that VMGO were highly disseminated, and they highly accepted them. Lastly, the VMGO was consistent and congruent to educational practices of the school. It is therefore recommended to continue the activities and programs that are undertaken to retain or even increase the stakeholders' level of awareness, perceived level of VMGO dissemination, perceived level of VMGO acceptance and level of agreement as to consistency and congruency of VMGO to educational practices.

Keywords: Capiz State University, descriptive, stakeholders, perception, VMGO

## SCHOOLHEADS' COMPETENCE, PRACTICES AND CHALLENGES IN THE IMPLEMENTATION OF INCLUSIVE EDUCATION IN THE SCHOOLS DIVISION OF ZAMBALES

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Achieving success in the implementation of inclusive education goes with several obstacles and challenges. As such, it remains in the realm of theory and far from practice, which was the focus area of this study. A descriptive - survey research design was used to determine the school heads' competencies in the implementation of inclusive education, the challenges faced by school heads and teachers encountered which will be used as basis in crafting an action and strategic plan for utilization in school-based learning program. The study was conducted among the selected Public Schools of DepEd, Division of Zambales. The study's findings revealed that the level of competence of school heads in the implementation of inclusive education were assessed by school heads and teachers as highly competent. The school heads and teachers reported that the practice in the implementation of inclusive education was always practiced by school heads. The school heads and teachers moderately encountered challenges in promoting inclusive education. There was a significant difference in the assessment of school heads and teachers on school heads level of competence in the implementation of inclusive education. There was no significant difference in the level of school head's implementation practices of inclusive education as assessed by school heads themselves and teachers. The utilization of descriptive- correlational study showed that there was significant relationship between the school heads' competence and inclusive education implementation practices. There was significant relationship between inclusive education implementation practices and the challenges encountered in promoting inclusive education. The proposed action plan for school - based learning program has been developed for utilization in the implementation of inclusive education. Since the objectives of inclusive education cannot be achieved unless collective responsibilities are taken by the families, communities, schools, developmental agencies and the government, then schools may partner with key entities in promoting inclusive education.

Keywords: Inclusive Education, Schoolheads' Competence

## Crafting an Initial Psychological Skills Training (PST) Program Based on the PST Profile of Collegiate Student Athletes

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The sport industry has started to realize the value of Psychological Skills Training (PST) as one of the key elements in sustaining an athlete's performance. Aside from physical training, there is an arising need of helping athletes develop their mental skills since sports is a combination of mind and body coordination. Even though there are already numerous studies citing its benefits, it is still rarely applied and there is a lack of established PST programs especially in state universities and colleges. This quantitative-comparative research surveyed 177 collegiate student-athletes from a state university in Tarlac Province during the first semester of the academic year 2023-2024. The Psychological Skills Inventory (PSI) by Wheaton was used as the instrument measuring six dimensions, namely: achievement motivation, goal setting, anxiety control, maintaining confidence, mental rehearsal, and coping strategies. Results showed that out of these six psychological dimensions, the respondents were high in goal setting and low in anxiety control. There were few significant differences in terms of profile variables such as in sex (where males have higher PST scores and anxiety control as the dimension with significant value); and age group (where adults obtained better scores, and significant difference was found in the mental rehearsal dimension). The differences in all the profile variables when compared to the PSI scale dimensions only accounted for small effects. With this, an initial PST program that is generic in nature was initially recommended as a proposal to be included in the university's sports programs.

Keywords: Collegiate Student Athletes, PSI, PST Profile, Psychological Skills Training

The Revolutionary Quest for Islamic Statehood: A Comparative Analysis of Hamas' and the Moro Islamic Liberation Front's History, Strategies, and Visions of the Future

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Jihad, or the "Holy War," has been the central theme of Islamic conflicts worldwide. Within Asia, two of the longest-running conflicts in the pursuit of Islamic Statehood and self-determination through jihad are Hamas, (Harakat al-Mugawama al-Islamiyya) and the Moro Islamic Liberation Front (MILF). Literature shows that despite the geographical disconnect, there are multiple intersection points between the two organizations: both aim for an Independent Islamic State, are engaged in armed conflict and struggle, embody jihadist ideology, and have cyclically faced successful peace process negotiations. While the MILF has achieved relative success in negotiating a peace agreement, Hamas has not, despite the similarities in history and structure. Attributing to the fact that Western and external perspectives on the organizations dominate current literature, this working study aims to comparatively analyze the organizations' personal perceptions of their historical struggles and visions for the future of their organization with regard to peace by utilizing a post-colonial approach under Arnold Toynbee's theory of Challenge and Response. The study collated and analyzed interviews, public statements, and written works publicly available and released by the organization and its key members to outline their stances and perceptions. A preliminary working analysis of the data shows that both organizations exhibit sentiments of historically unjust annexation, colonization, and disenfranchisement and that the solution to lasting peace is autonomous sovereignty under a historical Islamic State. This working study provides a fresh perspective into the two organizations by utilizing the perspectives of its members to answer the problem of their conflict. However, further studies are needed to comparatively analyze these organizations through direct contemporary interviews with their members. Additionally, this study also contributes to narratively grounded peacebuilding and conflict resolution discourse, especially in Islamist and separatist situations.

Keywords: Hamas, Moro Islamic Liberation Front, Jihad, Self-Determination, Perceptions
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