CITY COLLEGE
OF CAGAYAN DE ORO
AIM HIGHER

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Misamis Oriental, 9000

Book of Abstracts

1st HIGALAAY
Multidisciplinary Research Festival

Theme: *"Advancing Urban Development of Cagayan de Oro through Education and the RISE Agenda"*

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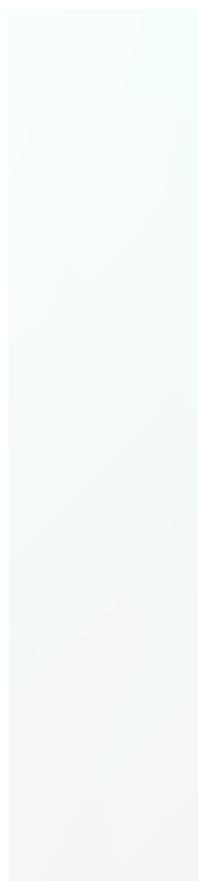Jonathan Madronero, MS Statistics

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cagayan deOro
city of golden friendship

CdeO RISE

1st

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HIGALAAY

Multidisciplinary Research Festival

Contents

Greetings!

The establishment of the City College of Cagayan de Oro is aimed at improving and expanding access of young Kagayanons to higher learning and technical-vocational skills, to equip them for the domestic and global markets. It is also aimed at developing the entrepreneurial mindsets of students and communities to further encourage them, not only to take advantage of, but also develop and create economic opportunities. Integral to its establishment, is the assumption of the functions of higher learning institutions in research and development.And in adopting the current trends, the City College is embarking on developing and nurturing the innovation culture and mindset integrated in all its programs.

On 29 August 2024, the City College will conduct the 1st Higalaay Multi-disciplinary Research Festival 2024 to showcase innovations and research works of students, faculties, local researchers and innovators.This event will highlight and promote the utilization of existing knowledge, scientific approaches and research processes to address local challenges in the application of the arts and sciences in addressing the challenges in the implementation of the RISE Development Framework, the main focus of which, is the improvement of the economic conditions of the inhabitants and families in the city, reinforced, sustained and secured by the responsive delivery of basic social services. The challenges of making efficient and effective the implementation of these economic and social programs, projects and activities can be addressed by the continuing improvement of the local government's institutional capacities, and the utilization of the opportunities of being the development hub of the region.

Many studies and innovations can be made, and is needed to realize the development goals of our city. This Research Festival is implemented to stimulate innovative ideas and to encourage the conduct of more researches and development activities. If we will focus on the practical utilization of the extensive knowledge and developments in the theoretical and applied natural and social sciences, in meeting our challenges for socio-economic and institutional development, we will be overwhelmed by the abundance of the possibilities in our hands. All these possibilities will spur economic growth and improve the well-being of Kagayanons.

Let this Higalaay Multidisciplinary Research Festival reinforce the foundations of an innovative city. Let this Research Festival hasten the development of Cagayan de Oro as another SMART City, ensure socio-economic growth, and provide more innovations for the improvement of the well-being of every Kagayanon.

May all the endeavors of the City College of Cagayan de Oro be a success.

Hon. Rolando "Klarex" A. Uy
City Mayor
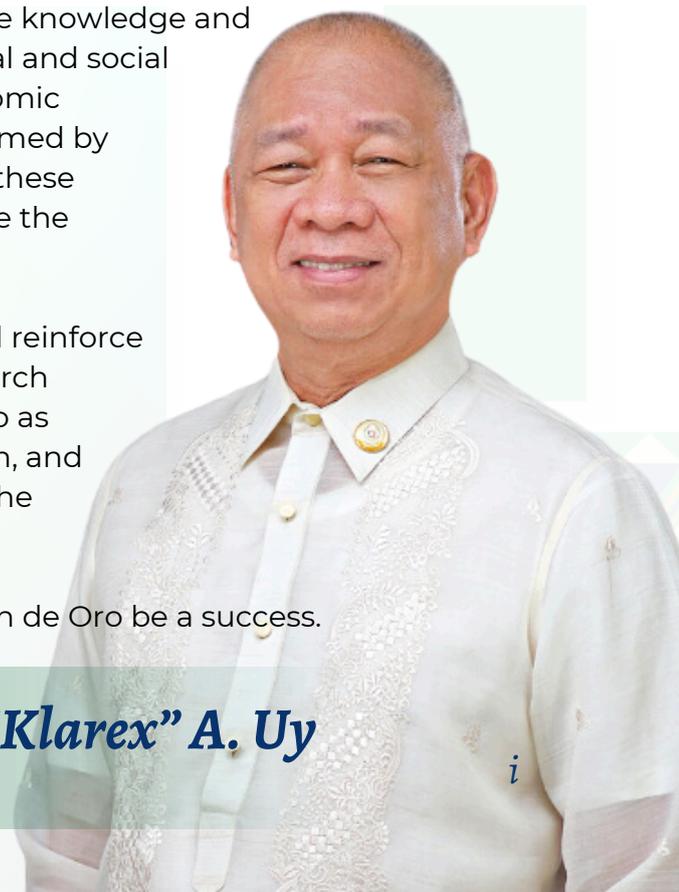
Message

Multidisciplinary Research is not only necessary but is also essential in facing the 21st Century challenges faced by our growing City.

As we gather for the 1st Higalaay Multidisciplinary Research Festival, we celebrate the importance of collaboration in advancing our city's urban development.

Our theme, "Advancing Urban Development of Cagayan de Oro through Education and the RISE Agenda," highlights our commitment to Regionalization and Metropolization, Institutional Development, Security and Safety, and Economic Recovery and Sustainability - the visionary statement of Mayor Rolando A. Uy's leadership in bringing our City towards a brighter future.

The City College of Cagayan de Oro, one of the enduring legacies of our current administration, stands at the forefront of these efforts. Through research and innovation, our college is dedicated towards enhancing good governance and in improving the quality of life for our citizens. In promoting a culture of research and education, we equip ourselves with the knowledge and tools needed to build a better future for all.

As your Vice Mayor, I encourage everyone to take part in this festival, share your insights, and learn from one another. Together, we can truly rise up as a Metro Cagayan de Oro leading not only in Northern Mindanao but also for the entire Mindanao.

Thank you, and let's make this festival a great success!

Hon. Jocelyn "Bebot" Rodriguez
City Vice Mayor

Message

I am filled with pride and anticipation for what this festival represents—a celebration of knowledge, innovation, and the collaborative spirit that drives our city forward. The theme, *"Advancing Urban Development of Cagayan de Oro through Education and the RISE Agenda,"* reflects our shared commitment to fostering a city that is not only prosperous but also resilient, inclusive, smart, and environmentally sustainable.

Research is the lifeblood of progress. It is through the relentless search for knowledge and innovations and the courage to explore new ideas that we can address the complex challenges facing our urban landscape. This festival symbolizes the dedication of our academic community and their unwavering resolve to contribute meaningfully to the development of Cagayan de Oro City.

The abstracts presented in this book are more than just summaries of research—they are the seeds of future growth, offering insights and solutions that have the potential to transform our city. Each study, each idea, is a step towards a brighter, more sustainable future for all of us.

I encourage you to consider the broader impact of your work and the ways in which your research can contribute to the RISE Agenda. Let this festival be a platform not only for sharing knowledge but also for sparking new collaborations and inspiring continued innovation.

I extend my deepest gratitude to the City College of Cagayan de Oro and all those who have contributed to making this festival a reality. Your efforts are laying the foundation for a stronger, more vibrant Cagayan de Oro.

Daghang salamat, and may the insights and discussions generated here lead to lasting, positive change for our city.

Hon. Suzette Magtajas-Daba
Chairperson, Committee on Education

Message

As the Interim President of the City College of Cagayan de Oro, I am honored to extend my support to the inaugural Higalaay Multidisciplinary Research Festival organized by the City College of Cagayan de Oro team, led and supported by the City Mayor, Hon. Rolando Klarex Uy.

This event stands as a testament to our commitment to innovation, sustainable development, and the advancement of knowledge within our city and beyond. Drawing inspiration from the transformative power of Industry 5.0, we recognize the importance of fostering human-centric collaboration and leveraging technology to enhance local governance and policy development.

Our approach aligns with the principles outlined in recent studies, emphasizing the role of proactive governmental support in synchronizing public policies with the rapid pace of digitalization. By doing so, we aim to bridge the gap between the public and private sectors, facilitating a collaborative ecosystem that nurtures innovation and supports the core values of Industry 5.0—job creation, open innovation, carbon neutrality, and inclusivity across the value chain.

Research plays a pivotal role in this journey, serving as the foundation upon which effective policies and initiatives are built. Through rigorous analysis of existing literature, empirical case studies, and the application of qualitative and quantitative methodologies, we strive to evaluate the effectiveness of technological solutions and policy interventions. This comprehensive approach enables us to tailor our efforts to the unique challenges and opportunities presented by Cagayan de Oro, ensuring that our research contributes meaningfully to achieving Sustainable Development Goal 11 and beyond.

Moreover, we understand that the transition towards Industry 5.0 requires significant investment in technology acquisition, research & development, and digital expertise. Recognizing the resource-intensive nature of corporate digitalization, we are committed to strategically allocating resources to support this transformation. Our focus extends beyond financial capital to encompass the organizational capabilities needed to integrate resources effectively, fostering inter-functional and interdepartmental collaboration that empowers digital transformation.

Hence, the 1st Higalaay Multidisciplinary Research Festival represents a crucial step forward in our city's journey towards becoming a smart city that embraces Industry 5.0 technologies. By fostering collaboration among educational institutions, aligning our research efforts with sustainable development goals, and proactively supporting digital transformation, we aim to enhance productivity, drive city progress, and contribute to a brighter future for Cagayan de Oro and its residents!

Jestoni P. Babia, LPT, MaEd, Ed.D
Interim President, City College of Cagayan de Oro

1st HIGALAAY

Multidisciplinary Research Festival
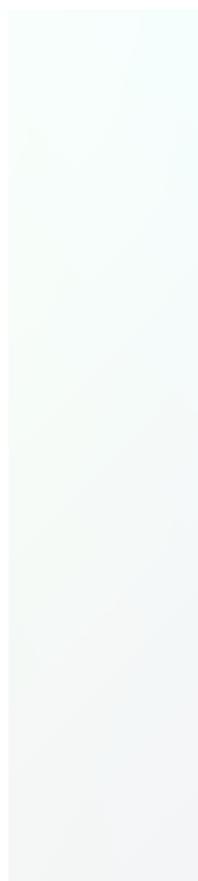
RATIONALE

The City College of Cagayan de Oro proudly announces the Higalaay Multidisciplinary Research Festival 2024 on August 29, 2024 at Agusan Campus, Cagayan de Oro, a pioneering event aimed at driving forward the culture of research and innovation within the vibrant academic community of Cagayan de Oro. Recognizing the vital role of research in societal advancement, the festival is strategically designed to serve as a platform for showcasing the rich investigative work and scholarly pursuits. The initiative is in response to the growing need for a collaborative space that celebrates and nurtures the intellectual efforts of students, faculty, and local researchers

The **Higalaay Multidisciplinary Research Festival 2024** is a prestigious research competition offering cash awards to winners in both oral and poster presentation categories. It seeks to offer a dynamic venue for the academic community to engage with each other's work critically and constructively. It is envisioned to spark a discourse that not only elevates the quality of local research but also aligns with the broader global academic standards. By centering on Cagayan de Oro, the festival not only highlights the city's potential as a hub for academic excellence but also encourages scholars to contribute tangibly to the city's development and resilience.

Objectives
1. Promote Multidisciplinary Research Collaboration
2. Enhance Public Understanding and Engagement with Research
3. Contribute to Local Policy Development and Implementation

Content and Themes
• Kagay-an history, culture, and traditions
• Regional leadership and community development
•Participatory governance
• Public safety and social well-being
• Economic recovery and growth
• Human development and education (basic and higher)
• Environmental sustainability and conservation

HIGALAAY Multidisciplinary Research Festival
August 29, 2024 | City College of Cagayan de Oro

P R O G R A M

7:30 AM — **Registration**

8:00 AM — **Preliminaries**
Invocation, National Anthem, Cagayan de Oro March, City College Hymn

8:15 AM — **Opening Remarks**
Jestoni P. Babia, Ed.D
City College President

8:30 AM — **XU Dance Troupe (Maranao Dances)**
Xavier University -Ateneo de Cagayan

8:40 AM — **Rationale of the Activity**
Ray Butch D. Mahinay, Ph.D
Associate Vice-President for Academics

8:45 AM — **Messages of Support & Exhibit Launch**

Hon. Rolando "Klarex" A. Uy
City Mayor

Hon. Jocelyn "Bebot" Rodriguez
City Vice Mayor

Hon. Suzette Magtajas-Daba
Chairperson, Committee on Education

9:30 AM — **Introduction of Speakers**
Ma. Aira Chenessa B. Aguilar, Ed.D
Vice-President for Academics

9:35 AM — **"Empowering Future Innovators: Aligning Research for Employment, Entrepreneurship, and Product Innovation"**
Sarah O. Namoco, Ed.D

10:00 AM — **"Harnessing Game-Based Learning to Advance Cagayan de Oro's RISE Agenda through Innovative Educational Practices"**
Angelo Mark Walag, Ph.D

10:35 AM — **Plenary Talk 3**
Mr. Jun Dumaog

10:50 AM — **Gintong Amihan**
University of Science and Technology of Southern Philippines

11:00 AM — **Panel Discussion on Kagay-anon Culture**
Moderator: Candice Gamayon

1:00 PM	**Parallel Sessions**
	Oral Presentation
	Category A JHS/SHS - Covered Court
	Category B Undergrad/ Graduate - AVR
	Poster Presentation (Covered Court)
4:00 PM	**Awarding Ceremony**
4:55 PM	**Synthesis & Closing Remarks**
	Mr. Jonathan A. Madronero
	Vice President for Research

Vonn Francis F. Cantila & Eldin Camposo
Masters of Ceremony

Mechanics of Oral and Poster Presentation

All presenters must choose either the oral or poster presentation category for each of their submissions. This means that they can only join one category per paper. Multiple submissions of the same paper to both categories are not allowed. If you have different papers, you may submit each to different categories as appropriate.

A. Oral Presentation
1. Time Frame for Oral Presentations

Presenters must strictly adhere to the allotted time frame for their presentations.
Oral Presentation: 5-7 minutes
Panel Reactor Q&A: 3 minutes per panel member

2. Panel Reactor Role

The panel of reactors will provide recommendations on how the research findings can be:

- Replicated in different contexts
- Utilized for policy directions
- Applied to enhance existing programs
- Contributed to policy formulation for innovative educational reforms

Reminders for Panelists

- Evaluate each presentation based on the established criteria, including content, organization, visual appeal, and adherence to guidelines. Ensure a fair and consistent assessment for all entries.

- Offer clear, constructive feedback to presenters, focusing on strengths and areas for improvement. Aim to help presenters enhance their work and presentation skills.

- Approach each presentation with an open mind and respect for the presenters. Avoid bias and ensure that all evaluations are conducted impartially.

- Stick to the allocated time for Q&A sessions and evaluations to ensure a smooth and timely process for all presentations.

- Keep all evaluation discussions and decisions confidential until the official announcement of results. Respect the integrity of the judging process.

3. Conference Participation Guidelines for Team Research

- For team research, there will be one (1) free complimentary conference kit, snacks, and meals. The team must select member/s to serve as the presenter on behalf of the entire team.

4. Use of Prescribed Template

- Oral presenters shall use the prescribed template for their slides to ensure consistency and professionalism across all presentations.

- This template includes designated sections for the title, introduction, methods, results, and conclusion, with guidelines for font size, color scheme, and the use of visuals such as graphs, charts, and images.

- The uniformity in design will facilitate a seamless viewing experience for the audience and allow the content to be easily compared and understood.

5. Criteria for Oral Presentation Category

The criteria for the Oral Presentation Category are as follows:

Content (40%) - evaluates the depth, relevance, and accuracy of the information presented, ensuring it is well-researched and insightful.

Organization (20%) - assesses the logical flow and clarity of the presentation, looking at how well the introduction, body, and conclusion are structured.

Visual (15%) - examines the quality and effectiveness of the slides, focusing on their design, readability, and relevance to the spoken content.

Delivery (15%) - considers the presenter's communication skills, including their clarity, confidence, engagement with the audience, and ability to answer questions.

Adherence to Guidelines (10%) - checks if the presenter followed the prescribed template and adhered to the time limits and other provided instructions.

Note: All presenters are required to submit their manuscripts following the IMRAD format 5 days before the event, which includes the Introduction, Methods, Results, and Discussion sections. The Introduction should provide background information and state the research problem and objectives. The Methods section must detail the research design, procedures, and analysis techniques used to ensure reproducibility. The Results should present the key findings clearly, using tables and figures as necessary to support the text. The Discussion should interpret the results, discussing their implications, limitations, and potential for future research. Manuscripts must adhere to these guidelines to ensure a structured and comprehensive presentation of the research.

B. Poster Presentation

1. Guidelines for Poster Presentations

- Accepted research entries for the poster presentation must follow the prescribed template, ensuring a uniform and professional appearance across all submissions. The poster should be 48" × 36" in portrait orientation. In team research, only the lead researcher is advised to attend the in-person event to present the poster. This ensures that each research team is represented effectively while streamlining the logistics of the event.

- The layout should be well-organized, typically following the IMRAD format (Introduction, Methods, Results, and Discussion).

- Introduction should provide background information and state the research question or hypothesis.

- Methods section should briefly outline the research design, participants, procedures, and analysis.

- Results should be presented using charts, graphs, and images that make the data easy to understand briefly.

- Discussion should interpret the findings, noting their significance and potential implications. Ensure all text is legible from a distance, using bullet points to break up large blocks of text, and maintain a consistent color scheme and font style throughout.

During the presentation, stand by your poster to engage with viewers, summarizing your research and answering questions. Begin with a brief overview, highlighting the key points, then delve into more detail based on the audience's interest and questions.

2. Criteria for Poster Category

The criteria for evaluating posters in the poster presentation category are as follows:

Content (40%)- assesses the depth and relevance of the information presented. It includes the clarity of the research question, the thoroughness of the methodology, the significance of the results, and the interpretation in the discussion.

Design and Visual Appeal (30%)- measures the effectiveness of the poster's visual presentation. It includes the use of color, layout, and graphics to make the poster engaging and easy to read. It also considers the organization and overall aesthetics.

Clarity and Readability (15%)- evaluates how well the text and visuals communicate the research. It includes font size, text clarity, and the logical flow of information. The poster should be easy to understand at a glance and should not be cluttered.

Presentation (10%)- examines the presenter's ability to communicate their research effectively. It includes their engagement with viewers, the clarity of their explanations, and their responsiveness to questions.

Adherence to Guidelines (5%)- checks if the poster follows the prescribed template and other submission guidelines, including dimensions and orientation.

3. Reminders for Panelists

- Evaluate each presentation based on the established criteria. Ensure a fair and consistent assessment for all entries.

- Offer clear, constructive feedback to presenters, focusing on strengths and areas for improvement. Aim to help presenters enhance their work and presentation skills.

- Approach each presentation with an open mind and respect for the presenters. Avoid bias and ensure that all evaluations are conducted impartially.

- Keep all evaluation discussions and decisions confidential until the official announcement of results. Respect the integrity of the judging process.

Note: For all oral and poster presenters, please be aware that the judges' decisions are final and irrevocable. No appeals or revisions to the results will be entertained once the evaluations are complete.

Category A
(Junior/Senior High School)

ABSTRACTS

HUMAN HAIR AND COGON GRASS *(Imperata cylindrica)* BLOSSOM SORBENTS FOR OIL SPILL MANAGEMENT

Esel Juvic B. Dinampo, Isiah Marie C. Donghil, and Mikaella Faith A. Fernan
Gusa Regional Science High School - X

Oil spills can be cleaned up using a variety of oil sorbents. Sorbents have different abilities and effectiveness, but they serve the same purpose, to clean the disposed oil in bodies of water that destroy marine life and affect the economy. Most commercially sold sorbents are non-biodegradable and may further affect the environment, thus, a study was conducted to develop a sorbent made from human hair and Cogon grass (Imperata cylindrica) blossoms that can sorb oil and is composed of an organic material. This study includes the collection, preparation, testing, and analysis of the data after testing the sorbents. The calculations using the given formulas for Oil Sorption revealed that Treatment A (100% Cogon Grass Blossoms) can sorb oil approximately six times its own weight. Followed by Treatment C (50% Cogon Grass Blossoms and 50% Human Hair), which can sorb oil five times its own weight. Treatment D, the controlled variable, can sorb oil approximately four times its own weight. Lastly, Treatment B (100% human hair) can sorb oil approximately three times its own weight. Human hair and Cogon grass blossoms have been regarded as waste material, and both showed great potential in oil sorbing. It is concluded that Cogon grass blossoms showed the highest result on all tests. This sorbent was then followed by a sorbent composed of human hair and Cogon grass blossoms, the commercially used sorbent pads, and lastly, the human hair sorbent. This makes the sorbent composed purely of Cogon grass blossoms the most ideal sorbent among others.

Keywords: *oil spill, human hair sorbents, cogon grass blossom sorbents, sorbents, sorption*

COMPOSITION AND ABUNDANCE OF PHYTOPLANKTON: A RED TIDE RISK ASSESSMENT IN LAGUINDINGAN, MISAMIS ORIENTAL

Hershey C. Cano , Kiesha N. Enriquez, & Saint Chenzy T. Lee
Gusa Regional Science High School - X

Harmful Algal Blooms (HABs) or Red Tide are rapidly increasing in HAB groups, posing significant health risks to marine life, local economies, and humans exposed to contaminated water sources. A study about the composition and abundance of phytoplankton in Laguindingan, Misamis Oriental, was conducted from April to June 2024, with the assistance of the Bureau of Fisheries and Aquatic Resources (BFAR). This involves barangay identification in Laguindingan, measurement of seawater parameters, collection of the water sample and its analysis for the phytoplankton species present, and lastly, the computation of the population of the species and its toxins. Diatoms and Dinoflagellates are the two phytoplankton groups that have been identified. Diatoms were found to be the most prevalent group from April to June 2024. In April, there were a total of (183) diatoms and (49) dinoflagellates. (12) dinoflagellates and (44) diatoms in May. Lastly, there were a total of (23) dinoflagellates and (953) diatoms in June. There are eleven (11) harmful dinoflagellates present, and some are Scrippsiella, Peridiniales, Gonyaulax, Ceratium species, etc. While there are twelve (12) harmful diatoms, include Pseudo-nitzschia, Thalassionema, Chaetoceros species, etc. Dinoflagellates are responsible for producing saxitoxins, brevetoxins, and ciguatoxins, while diatoms produce domoic acid and okadaic acid. These toxins can have severe effects on marine life and human health, leading to conditions such as paralytic shellfish poisoning (PSP), neurotoxic shellfish poisoning (NSP), ciguatera fish poisoning, amnesic shellfish poisoning (ASP), and diarrhetic shellfish poisoning (DSP). Laguindingan has a population of 9,347 with 914 fisheries, which means a high risk to the community if the HAB's occur. Findings in this study indicate that the Laguindingan coastal area does not imply the presence of HABs, as it is not abundant enough to trigger a bloom.

Keywords: *Harmful Algal Blooms (HABs), abundance of phytoplankton, toxins/shellfish poisoning*

SEAWEED-BASED BIOPLASTIC FILM USING GUSO *(Kappaphycus alvarezii)* AS AN ALTERNATIVE CLOTHES PACKAGING MATERIAL

Imada, Frances Ellaine J., Yap, Shanize Jezha C., & Tanasas, Lara Jen Eunice D.
Lourdes College

The increasing global plastic pollution crisis necessitates the development of sustainable alternatives to traditional plastics. This study investigates the potential of seaweed-based bioplastics, specifically utilizing Kappaphycus alvarezii, (Guso), as an eco-friendly packaging solution for clothing. The research aims to assess the durability, degradability, and cost-effectiveness of bioplastics produced from this abundant marine resource. Employing a descriptive-experimental methodology, various compositions of seaweed, tapioca starch, water, and glycerol were tested to optimize the bioplastic's properties. The results demonstrated that the seaweed-based films exhibited superior durability and rapid degradability, surpassing the standards set by JIS 2-1707 and ASTM D5338-15. These findings underscore the potential of Kappaphycus alvarezii-derived bioplastics as a viable substitute for petroleum-based plastics, contributing to environmental sustainability through reduced waste and pollution. The study also highlights the economic feasibility of producing seaweed bioplastics, suggesting that they can be manufactured at a lower cost compared to conventional plastics. This study contributes to the growing discourse on bioplastics by highlighting the advantages of using renewable marine resources. It identifies critical research gaps in the current literature, particularly regarding the application of seaweed in reducing plastic waste and enhancing the sustainability of packaging materials. Future research directions are recommended to explore additional parameters and the scalability of production processes, which could facilitate broader adoption of seaweed bioplastics in various industries. This research underscores the importance of transitioning towards sustainable packaging solutions, advocating for the integration of innovative materials like seaweed based bioplastics in the fight against plastic pollution while promoting environmental stewardship and economic viability.

Keyword: *Seaweed, Bioplastic Film, Degradable, Durable, Cost-Effective*

CORRELATIONAL ANALYSIS OF REGISTERED MOTOR VEHICLES AND AIR QUALITY INDEX IN CAGAYAN DE ORO CITY

Jerricel Y. Avila, Kziah D. Non, & Mary Julia C. Yurong
Gusa Regional Science High School - X

Statistics from 2016 reveal that motor vehicles significantly contribute to air pollution in the nation, accounting for 80% of the total pollution, with stationary sources and open burning accounting for the remaining 20%. A study conducted in Cagayan de Oro City aimed to delve deeper into the connection between registered motor vehicles and the air quality index, specifically focusing on Particulate Matter (PM) 2.5. Research indicates that larger wear particles (PM 2.5–10) primarily stem from road abrasion, while PM 2.5 emissions are mainly released by vehicles through their exhaust pipes (Ferm & Sjöberg, 2015). Utilizing data from the DENR-EMB and LTO agencies from 2018 to 2022 and applying the Pearson-r formula, the study sought to examine the relationship between registered motor vehicles and the air quality index and project the air quality for the upcoming five years using Excel's forecasting tool. The findings indicated a significant yet moderately positive correlation between the variables. Several factors influenced this relationship, including (1) the fact that not all motor vehicles are registered, (2) limited data on the air quality index, and (3) the impact of the pandemic on air quality. The correlational graph showed a decline, suggesting a decrease in air quality over the next five years. While acknowledging that the prediction may not offer absolute precision, it remains crucial to emphasize the importance of creating awareness and seeking effective solutions to combat this environmental issue that our city is facing today. The study concluded that an escalating number of registered motor vehicles poses a heightened risk of increasing PM 2.5 emissions, underscoring the urgency of addressing this matter promptly.

Keywords: *registered vehicles, air quality index, traffic volume prediction, air quality, PM 2.5 emissions*

A MATHEMATICAL MODEL ON SCHISTOSOMIASIS TRANSMISSION THROUGH WATER BUFFALO *(Bubalus bubalis)*

Bao, Dann Agustin E., Calizar, John Carl Henzson S., Domingo, Jhun Manuel A.
Philippine Science High School SOCCSKSARGEN Region

The purpose of this study is to develop a mathematical model to understand the transmission dynamics of schistosomiasis involving water buffaloes, a significant reservoir for Schistosoma japonicum. The problem addressed is the persistent prevalence of schistosomiasis, particularly in endemic regions, despite existing control measures. The approach involved creating a specialized mathematical model to simulate various intervention scenarios, focusing on vaccination coverage and efficacy among buffaloes. Numerical simulation was employed to explore the effects of different control strategies and to predict outcomes under various scenarios. The results indicated that increasing vaccination coverage and efficacy significantly reduces the prevalence of the disease in water buffaloes, but has little to no effect on snails. The model demonstrated that control strategies, such as vaccination, is effective in reducing disease prevalence and sustaining control efforts over the long term. In conclusion, the study underscores the critical need for targeted interventions focusing on water buffaloes to manage and potentially eradicate schistosomiasis in endemic regions. By integrating these strategies, there is significant potential to reduce the disease burden and improve health outcomes in affected communities. Future research should refine the model with detailed data on the actual rates or equations for the interactions and environmental factors influencing transmission. Additionally, exploring the economic implications of various control strategies will ensure cost-effective and sustainable schistosomiasis management, leading to better public health outcomes and improved quality of life.

Keywords: *Schistosomiasis, Water Buffalo, Mathematical Modeling, Disease Transmission, Epidemiology, Numerical Simulation*

EXPLORING THE LIVED EXPERIENCES OF BUSY GARDENERS IN THEIR GARDENING INVESTMENTS

Cruz, Kein Euhann L. & Cagalawan, Ysabelle Grace
University of Science and Technology of Southern Philippines

The decline of gardening engagement among individuals, who initially embraced the activity during the COVID-19 pandemic but struggled to maintain it after resuming to the normal lifestyle when the onsite working and learning ban were lifted after the pandemic, highlighted the challenges of balancing hobbies amid increasing time constraints. The main objective of this qualitative study was to observe and describe the lived experiences of the ongoing difficulties of passionate gardeners who turned busy after the pandemic lifestyle was lifted. A phenomenological approach was used to explore the participants' lived experiences in maintaining their gardens. The researchers purposively selected eight participants in the study based on the determined inclusion and exclusion criteria. This study employed thematic analysis, particularly conventional content analysis, to discern recurring narratives and themes. Three themes emerged in the research question: Juggling Between Garden and Work Responsibilities, Stress Reliever, and Responsible Human Beings. After carefully transcribing, translating, and categorizing the answers into themes, the findings indicate that participants are passionate about pursuing and continuing their gardening endeavors post-pandemic. However, participants face challenges prioritizing their plants over their professional and societal tasks.

Keywords: *post-pandemic lifestyle, gardening engagement lifestyle, work-life balance challenges*

ASSESSING COVID-19 IMPACT ON AGRICULTURAL PRODUCTION IN MINDANAO

Jamie Caesar M. Dumpa, Bryle John D. Templonuevo, Denise Gabb C. Ty
Philippine Science High School SOCCSKSARGEN Region Campus

This study quantitatively analyzes the production volume of selected agricultural products in various regions of Mindanao from 2019 to 2022, employing testing and visualization to highlight the significant variability influenced by weather patterns, market demands, pest outbreaks, and policy interventions. The findings underscore the complex dynamics within the agricultural sector, with a particular focus on environmental sustainability. The study aligns with Sustainable Development Goal (SDG) 12 (Responsible Consumption and Production) by advocating for sustainable farming practices that reduce environmental impact, conserve resources, and enhance food security. Additionally, it addresses SDG 13 (Climate Action) by emphasizing the need for climate-smart agricultural practices that mitigate the adverse effects of climate change on agriculture, such as adopting resilient crop varieties and efficient water management techniques. The study also supports SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-being) by promoting practices that ensure consistent and nutritious food production. Overall, this research provides valuable insights into the environmental challenges and opportunities within the Philippine agricultural sector, advocating for policy interventions and sustainable practices that enhance the sector's resilience, sustainability, and contribution to global environmental goals.

Keywords: *COVID-19, Agricultural Production, Chernoff Faces, Visualization*

URBAN ASSESSMENT OF SPIDER (ARANEAE) SPECIES RICHNESS AND COMPOSITION IN PROVINCIAL TREE PARK, MALAYBALAY CITY, BUKIDNON

Juris Alexandra A. Pagasian, Paul Kyne V. Rozaldo, Althea Carmille B. Tilanduca, Authumn Brynt R. Arujado
San Isidro College

Spiders take an essential role within natural ecosystems. It serves as a bioindicator for many environmentalists. These serve as an instrument for monitoring alterations in the state of the environment and their potential effects on the lives of people. It helps with the equilibrium of the food web or food chain. The study focuses on spider (Araneae) species in Barangay 9, Provincial Tree Park, Malaybalay City, Bukidnon. It aims to collect and identify spider (Araneae) species, and determines the morphology and taxonomy of spider (Araneae) species, the diversity and richness index, and the conservation status of the identified spider species. The spider species were found and collected along a 300-meter transect walk in Provincial Tree Park, Malaybalay City, Bukidnon. Spiders were collected utilizing beat-netting, sweep-netting, and vial-tapping methods. A total of nine (9) individuals from four (4) families and eight (8) genera were identified. Shannon-Wiener's Diversity Index was used to assess spider species diversity at the study site, yielding a score of 2.16. & Margalef's Biodiversity Richness Index was used to calculate spider species diversity. The result is 3.4744. The area exposed to human disturbances indicated low diversity and medium species richness. Four of the species of spiders that have been found are said to be either completely absent or nonexistent in any area. Three varieties of spiders were classified as safe. One species was suggested to be secure and steady. However, it was discovered that one kind of spider was weak. Populations of spider species are impacted by unsustainable human disturbances and environmental changes, which shed light on the challenges of preserving these arthropods.

Keywords: *Araneae, morphology, taxonomy, conservation, diversity and richness index*

INTELLIFARM: INTEGRATION OF ARDUINO, MOBILE APPLICATION, AND ARTIFICIAL INTELLIGENCE AS MODERN FARMING MANAGEMENT DEVICE

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Despite being an agriculture-dependent country, the Philippines' farm management system still faces problems including climate change, improper water irrigation, low yield, soil degradation, and antiquated methods (Asio et al., 2009). Various technologies and solutions have been developed over the past few decades; however, it also created environmental and social problems such as accelerated soil erosion, biodiversity loss, and human poisoning (Briones, 2005). Therefore, in developing a solution, factors such as efficiency, sustainability and environmental impact must also be taken into account. With these, the researchers decided to create a system of solution which includes an installable device, an application, and an Artificial Intelligence model. The installable device was equipped with sensors that detects parameters that are relevant to farmers. It was made possible using the Arduino microcontroller as the main control unit. The application on the other hand, which receives data sent by the installable device was made on a cloud platform which is MIT App Inventor. Lastly, the Artificial Intelligence model was trained using another cloud platform website called Teachable Machine. After the fabrication and development of the 3 components, data was collected to test its performance. The tests performed showed that the installable device has a mean detection speed of 3035 ms or about 3 seconds. The standard deviation was also calculated and it revealed that the data is consistent and clustered tightly. On the other hand, the application showed contrasting result. Although the application has relatively low mean transmission speed of 4125 ms or about 4 seconds, its standard deviation is incredibly high which suggest that the data is highly dispersed and some cluster far from the mean. This indicates that its transmission speed is inconsistent. For the Artificial Intelligence model, the researchers calculated its mean accuracy to be 95.31%, mean precision of 92.22%, mean recall of 90.63%, and mean F1 score to be 89.17% . The measured statistics of the AI suggests that it is reliable and generally accurate. The values also are all within range of the industrial standard.

Keywords: *Arduino, artificial intelligence, farm management system, mobile app, disease detection*

A MATHEMATICAL MODEL AND NUMERICAL SIMULATION OF SCHISTOSOMIASIS TRANSMISSION THROUGH SNAILS

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Schistosomiasis is considered as a neglected disease, hence despite its prevalence and endemicity in the Philippines, it lacks the necessary attention needed to alleviate its spread compared to other diseases. This study aims to develop a mathematical model that can assess schistosomiasis transmission in the Philippines. The model was formulated based on initial assumptions that the interactions and transitions between the compartments involved through certain parameters–consisting of various rates and constants that describe variables are involved in schistosomiasis transmission. Thus, simulations were conducted on the model in order to assess its performance and accuracy under different conditions over a 28-year period. Inputs on the model used for the simulations were derived from preexisting studies, data provided by the DOH, or assumed if real-world data was unavailable for a certain parameter. Findings reveal great accuracy of the model to real-world data. Furthermore, results suggest that implementing control measures and interventions can mitigate schistosomiasis spread by decreasing the infected human and snail populations, highlighting their effectiveness. The final output of the model, showcases its accuracy and reliability in visualizing schistosomiasis transmission dynamics, as well as the insight gathered from the simulations can have various practical implications in the field of epidemiology particularly in assessing the nature of schistosomiasis spread, helping health workers, policymakers, and the government. Thus, as a step towards eradicating the disease while supporting Sustainable Development Goals 3, 6, and 17, this research on schistosomiasis was conducted.

Keywords: *Schistosomiasis, Snails, Mathematical Modeling, Disease Transmission, Epidemiology*

DETERMINANTS OF GOOD ACADEMIC PERFORMANCE AMONG SENIOR HIGH SCHOOL STUDENTS OF MACABALAN NATIONAL HIGH SCHOOL

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The determinants of academic productivity encompass a spectrum of factors, ranging from individual attributes to institutional dynamics. Personal factors such as motivation, time management, and cognitive abilities play a crucial role in shaping the academic productivity of students. Additionally, effective teaching methodologies, curriculum design, and institutional support further contribute to the overall academic output of educational systems. This research underscores the importance of a conducive learning environment in fostering academic productivity. Factors such as classroom environment, teacher-student ratios, classroom comfort, and access to resources significantly influence the educational experience and subsequent productivity. Moreover, the role of technology in modern education is explored, with a focus on how its integration can enhance academic productivity through innovative teaching methods and improved access to information. Implications of academic productivity extend beyond immediate educational outcomes, influencing societal progress and economic development. Individuals who exhibit high academic productivity are better positioned to contribute meaningfully to their communities and the global knowledge economy. Educational institutions that prioritize academic productivity not only foster a culture of excellence but also contribute to the overall advancement of knowledge and skills in society. In conclusion, a comprehensive overview of academic productivity, examining its determinants and broader implications. As an essential aspect of educational research, understanding and enhancing academic productivity contribute to the ongoing discourse on educational quality and effectiveness. This research serves as a foundation for further exploration and empirical investigation into the intricate dynamics of social environment's roles in academic productivity.

Keywords: *Social Environment, Academic Productivity, Comprehensive Overview*

PIETHER: HARNESSING POTENTIAL RENEWABLE ENERGY FROM RAIN AND SUN HEAT UTILIZING PIEZOELECTRIC AND THERMOELECTRIC EFFECT

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Gusa Regional Science High School - X

In the Philippines, approximately 77% of electricity production relies on fossil fuels, leading to significant environmental challenges. One solution is to make use of the country's high temperature and abundant rainfall. Evidently, these renewable energy sources, which present a new area for sustainable development, remain unexplored. This study aims to harness voltage (V) and current (A) using the Piezoelectric Effect to convert rainfall vibrations into electricity and the Thermoelectric Effect to convert solar heat into electricity. Researchers employed 30 Piezoelectric discs under varying rainfall intensities (light, moderate, heavy) and 4 Peltier modules exposed to sunlight for 5 hours, with 15 trials at 20-minute intervals. Furthermore, to simulate rainfall intensities, researchers created a manual rain simulator after 6 trials for each rain intensity, the averages were 0.08V in light rain, 0.115V in moderate rain, and 0.2583V in heavy rain. Using One-way Analysis of Variance, a p-value of 0.073 at the significance level of 0.05 concludes that the voltage does show no significant differences between the rain intensity groups, suggesting it occurred by chance. On the other hand, Peltier modules were attached to an Aluminum plate exposed to the sun with an ambient temperature of 29°C, harvesting a maximum output of 11.86V and 15.47A. Through descriptive statistics, it indicates the possibility of generating electricity with an average voltage of 2.8053V and a current of 9.3700A. Overall, combining the accumulated voltage and current of the two panels shows potential for utilization in devices requiring low energy. This suggests that further improvements could lead to growth in renewable energy in the Philippines.

Keywords: *Renewable energy, electricity, Piezoelectric effect, Thermoelectric effect*

RELATIONSHIP OF GROSS REGIONAL DOMESTIC PRODUCT (GRDP) AND COVID-19 VACCINATION DISTRIBUTION IN THE PHILIPPINES

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Understanding and assessing the relationship and patterns between Gross Regional Domestic Product (GRDP) and COVID-19 vaccine distribution plays a critical role in shedding light on the existing disparities in vaccine allocation among different regions in the Philippines. The study utilized comprehensive GRDP and vaccine distribution data from authoritative sources: the Department of Health (DOH) and the Philippine Statistics Authority (PSA). Employing robust data analysis techniques and visualization tools in Jamovi, Tableau, and RGui, the findings exhibit a strong positive correlation between GRDP and vaccine distribution. This correlation implies that regions with higher economic output tend to have a better vaccine distribution per capita, thus affording their populations a higher level of protection against COVID-19. This reveals that improving economic conditions could indirectly enhance public health initiatives. The study emphasizes the need for equitable vaccine distribution in line with SDG 3 (Good Health and Well-being). In addition, the study highlights the importance of recognizing the connection between economic performance and vaccination outcomes.

Keywords: *GRDP, COVID-19, Region, Correlation, Philippines, Vaccination*

EXPLORING COPING STRATEGIES OF FILIPINO COLLEGE STUDENTS IN LONG-DISTANCE ROMANTIC RELATIONSHIP

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Long-distance romantic relationships (LDRRs) are one of the ways students demonstrate love and commitment despite geographical separation. However, much of the data available on this phenomenon in the Philippines is outdated and limited, indicating the need for more recent research. The purpose of this study is to understand the coping mechanisms of the challenges experienced by university students in Filipino-to-Filipino LDRRs using a phenomenological approach. Purposive sampling was utilized to select nine students from the University of Science and Technology of Southern Philippines. In-depth semi-structured interviews from both online and face-to-face based on the participant's preference were conducted with each of their informed consent and were audio recorded to ensure accuracy. Semi-structured interview questions were enhanced for clarity, credibility, and alignment with the research objective through consultation and validation by four research experts that further guaranteed that the data collected were relevant and comprehensive. Data were then analyzed using thematic analysis, specifically the conventional content approach. Furthermore, the researchers employed participant validation, allowing participants to review and provide feedback on the findings to ensure their experiences were represented in detail. Data confidentiality was maintained by anonymizing and securely storing information. The results identified three emerging themes such as building trust to alleviate relational doubts, expressing fondness to cope with personal adjustment, and exerting effort to surpass self-expression limitations. These mechanisms were found to be crucial in sustaining relationships and mitigating the adverse effects of physical separation. Future research may examine the long-term effects of LDRRs on personal development and mental health.

Keywords: *Challenges, coping strategies, long-distance relationships, phenomenology, university students*

PHYSICOCHEMICAL ANALYSIS OF SABANGAN RIVER, BARANGAY CAN AYAN, MALAYBALAY CITY, BUKIDNON

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The Sabangan River in Barangay Can-Ayan, Malaybalay City, Bukidnon, Philippines, is a popular recreational destination and a vital ecosystem supporting biodiversity. This study aimed to evaluate the water quality of the Sabangan River by analyzing key physicochemical parameters, including Total Dissolved Solids (TDS), Turbidity, Dissolved Oxygen (DO), pH, and Total Alkalinity. By assessing these parameters, the study provides essential data to ensure the river's ongoing safety and viability for both ecological health and human use. Five liters of water samples were collected from upstream, downstream, and middle stream locations, followed by ex-situ laboratory analyses for each parameter. The results indicate favorable water quality conditions, with an average TDS concentration of 146.67 mg/L, well below the DENR limit of 1,000 mg/L. Turbidity averaged 0.413 NTU, passing the maximum limit of 5 NTU, indicating good clarity. DO levels averaged 8.47 mg/L,]exceeding the DENR minimum limit of 5 mg/L. The pH averaged 8.26, within the acceptable range of 6.5 to 8.5, though slightly above the ideal upper limit. Total alkalinity averaged 112 mg/L, within the 5–500 mg/L permissible range, demonstrating the river's capacity to maintain a stable pH. The findings confirm that the Sabangan River's water quality meets established guidelines, ensuring its safety for recreational use and supporting local biodiversity. This is significant for the local community, recreational users, and tourists, providing a safe environment for activities and preserving the ecosystem. To ensure comprehensive river health, future studies should include assessments of heavy metal concentrations, microbial contamination, and other pollutants not covered in this investigation. Additionally, it is crucial to conduct future studies during the wet season, as this study was carried out during the dry season, to capture a more complete picture of the river's water quality throughout different seasonal conditions.

Keywords: *dissolved oxygen, pH, total alkalinity, total dissolved solids, turbidity*

COMPARATIVE ANALYSIS OF COCONUT SHELL AND MAHOGANY FRUIT AS SUSTAINABLE CHARCOAL SOURCES

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This study compares the efficacy of coconut shell and mahogany fruit as alternative charcoal sources. Our research focuses on evaluating key parameters such as charcoal yield, water boiling time, ignition time, burning rate, fixed carbon content, ash content, and calorific indices. The objective is to identify sustainable and environmentally friendly alternatives to conventional charcoal. Charcoal production from biomass is gaining attention due to the environmental concerns associated with traditional methods. Mahogany (Swietenia macrophylla King) and coconut (Cocos nucifera Linnaeus) are two potential biomass sources. Mahogany is a widely grown tropical hardwood, while coconut is abundant in tropical regions and produces significant agricultural waste. The study aims to compare the charcoal yield from coconut shell and mahogany fruit under similar pyrolysis conditions and analyze differences in various performance parameters. We utilized a comparative experimental design, conducting pyrolysis on 2 kg samples of each material. The resulting charcoals were tested for the specified parameters, with data analysis including mean values, standard deviations, and t-tests to determine significant differences. Results showed that mahogany fruit yielded 31% charcoal, while coconut shell yielded 29%. Coconut shell charcoal ignited faster, with a mean ignition time of 30.9 seconds compared to 50.1 seconds for mahogany. Furthermore, coconut shell charcoal had a higher fixed carbon content (72.48%) and lower ash content (2.32%) than mahogany (58.66% fixed carbon, 9.87% ash). Calorific values were also higher for coconut shell charcoal, indicating greater energy efficiency. In conclusion, coconut shell charcoal generally outperforms mahogany fruit charcoal across most measured parameters, making it a more efficient and desirable fuel source. These findings suggest that coconut shell is a superior alternative for sustainable charcoal production, offering environmental benefits and improved performance in practical applications.

Keywords: *sustainable charcoal, biomass, pyrolysis, coconut shell, mahogany fruit*

MICROBIAL ANALYSIS AND FOOD PREPARATION SAFETY PROTOCOLS OF STREET-VENDED ICE CREAM

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This study assessed street-vended ice cream sold on the streets of Malaybalay City, Bukidnon. Specifically, it aimed to identify the microbial communities present and the potential health risks they may pose based on literature and to determine the food preparation safety protocols of street-vended ice cream vendors. The study included three ice cream samples from three different vendors. Convenience sampling, bacteriological isolation, and interviews were employed. A total of four microbial communities were identified. Staphylococcus aureus, Proteus spp., and Enterobacter spp. were found in sample one, while Shigella spp. were found in samples two and three. All identified microbes may potentially pose infections, resulting in symptoms such as diarrhea, abdominal pain, and fever, particularly affecting individuals with weakened immune systems. To gain deeper insights into street-vended ice cream and ensure the safety of consuming these products, the interviews concluded with the following emerging themes: Hygiene Practices, Ice Cream Production Location, Ingredients Has Own Storage to Avoid Contamination, Purchasing the Ingredients the Day it will be used, and the License of Training and Permit Show Eligibility of the Business. It revealed that the respondents adhered to safety protocols when preparing the street-vended ice cream. Furthermore, it is recommended to implement stricter hygiene practices, regular monitoring and inspection, and provide comprehensive training for vendors to ensure consumer safety.

Keywords: *Bacteriological isolation, Microbial analysis, Safety protocols, Street-vended ice cream*

PHYTOCHEMICAL ANALYSIS AND WOUND HEALING POTENTIAL OF ALOE VERA (*Aloe massawana*) PEEL EXTRACT

Princess Jhazzy P. Arcaya*, Laurianne Mae D. Capilitan, Zhyanne R. Decano, Cathleen Denise G. Dugaduga, Aldrich Glenn L. Hernane, Jhovel Roy D. Calo & Ian Jay P. Saldo
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Aloe Vera has long been acknowledged for its therapeutic properties, with much research focusing on its gel. However, the peel of Aloe Vera, often overlooked, may also hold significant potential for wound healing. This study focuses on Aloe Vera (A. massawana) peel extract, investigating its specific phytochemical composition and therapeutic efficacy, particularly in the context of San Jose, Malaybalay City, Bukidnon. Understanding the phytochemical profile of Aloe Vera peel is crucial for harnessing its full therapeutic potential. This study aims to identify the phytochemical constituents of Aloe Vera (A. massawana) peel extract and assess their implications for wound healing through a review of related literature. Using purposive sampling, Aloe Vera peel samples were collected from local homes and processed into ethanolic extracts for comprehensive phytochemical analysis. The analysis assessed the presence of alkaloids, tannins, terpenoids, flavonoids, and anthraquinones using color-based tests conducted across five (5) trials. The results showed consistent positive outcomes for anthraquinones, flavonoids, and tannins across all five (5) trials, indicated by red, brown-yellow, and greenish-black colors, respectively. However, alkaloids and terpenoids were absent from our findings. Their absence suggests the Aloe Vera peel extract from our study area may have a different phytochemical profile, possibly due to variations in plant species, environmental conditions, or extraction methods. These findings suggest that anthraquinones, flavonoids, and tannins in Aloe Vera peel extract may offer therapeutic benefits for wound healing. This study highlights the importance of combining innovative scientific methods with traditional medical knowledge to enhance healthcare practices. Further research is needed to fully elucidate the mechanisms behind Aloe Vera's healing properties and optimize its therapeutic application in wound care.

Keywords: *Aloe Vera peel extract, phytochemical analysis, wound healing*

DETERMINATION OF MICROPLASTIC INGESTION IN PELAGIC FISHES

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The number of microplastics in the marine environment has increased in recent years, harming the lives of species, with pelagic fishes being particularly vulnerable due to their position in the marine food web. These micro debris are mistaken for food by fish since their size makes them appear like food. In this study, three types of pelagic fishes; Pidlayan (Auxis rochei), Tambakol (Thunnus albacares), and Bolis (Katsuwonus pelamis) were obtained from Macajalar bay wherein each sample's selected organs underwent to Potassium Hydroxide (KOH) digestion, with 5 mL 30% Hydrogen Peroxide (H_2O_2) within 2 hours. Followed by the wet peroxide oxidation, 20 mL of aqueous 0.05M Iron Sulfate (Fe II) was added with 20 mL H_2O_2 to further digest labile organic matter. Sieving then followed to isolate microplastics from the solution and to transfer them in a petri dish or glass slide in preparation for spectroscopy. Characteristics of microplastics extracted include shape, color, and size. Samples were analyzed in the laboratory for the presence of microplastics using Leica ES2 stereo microscope and Leica Microsystems compound light microscope with an eyepiece micrometer to measure the microplastics extracted. A software named, "Imagej" was utilized to further measure the microplastics extracted. Findings revealed microplastic contamination within the selected digestive tracts of the specimen, specifically in their gills, intestines and stomach. The specimen identified to have the greatest microplastic ingestion was Bolis (Katsuwonus pelamis), followed by Tambakol (Thunnus albacares) then Pidlayan (Auxis rochei). Fibers in samples are the most common microplastic shapes, with black and blue as the most common colors. The size of microplastics found were measured and classified into five groups: 1-50, 51-100, 101-500, 501-1000, and 1001-5000 µm, with the most common detected range being 1-50 µm. The presence of these microplastics further highlights the contamination of the Macajalar Bay having entered the marine food web.

Keyword: *Microplastics, Pelagic, Gill rakers, stomach, intestine*

PHYSICOCHEMICAL AND MICROBIAL ANALYSIS OF LAGASAN LAKE IN BARANGAY SAMPAGAR, DAMULOG, BUKIDNON

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Barangay Sampagar is located in the Municipality of Damulog, Bukidnon, and is home to numerous bodies of water. It is regarded as geographically isolated and disadvantaged. Although located in a remote agricultural area, Lagasan Lake supports local farmers by providing water for their crops. Conducting a comprehensive analysis of its physicochemical and microbial properties is essential as the Lake is essential for the community's well-being. This study evaluates parameters such as pH, turbidity, total dissolved solids (TDS), and dissolved oxygen (DO) using the grab-sampling method to collect and assess the water quality. The individual collected water samples were sent to FAST Laboratories for physicochemical and microbial testing. Results indicate that Lagasan Lake meets the acceptable standards set by the Department of Health (DOH) and Department of Environment and Natural Resources for pH, turbidity, total dissolved solids (TDS), and dissolved oxygen (DO) suggesting its sustainability for drinking and supporting aquatic life. The Microbial analysis reveals no bacterial growth, indicating the water's safety for consumption. This study emphasizes the importance of safeguarding water quality for sustainable development and human well-being. Future studies could focus on parameters such as heavy metal content, nutrient levels, and the presence of specific pathogens, which were not included in this study, to gain a more comprehensive understanding of Lagasan Lake's water quality and its potential impact on the community's well-being

Keywords: *Analysis, Bacteria, Dissolved solids, Dissolved oxygen, Physico-chemical, Turbidity, Water quality*

Category B
(Undergraduate/Graduate)

ABSTRACTS

DWHAT DO WE KNOW SO FAR ABOUT THE CAVES OF CAGAYAN DE ORO, AND WHY DO WE NEED TO SAVE IT?

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The Philippines harbors about 3,000 caves; however, many remain undiscovered, unassessed, and unclassified. While poorly known and understudied, caves are important habitats for over half of the country's bat species. In Cagayan de Oro, caves are recognized for their historical, aesthetic, and ecological value. Unfortunately, these caves face anthropogenic threats such as over-exploitation, unregulated tourism, and destruction. As such, this research aimed to achieve the following objectives: 1) determine the species composition of cave-roosting bats; 2) assess endemism and conservation status; 3) compute species indices; and 4) evaluate anthropogenic threats and the vulnerability of caves in Kweba de Oro and Macahambus Cave. Field sampling was carried out using the mist-netting method for a total of 15 net-nights and 180 net-hours for each cave. The Bat Cave Vulnerability Index (BCVI) was then used to assess the conservation status of each cave. Results revealed the presence of 220 individuals of cave-roosting bats belonging to six species, five genera, and four families. Eonycteris spelaea (n=165) was the most abundant species, followed by Hipposideros diadema (n=48), Emballonura alecto (n=21), Hipposideros ater (n=19), Myotis muricola (n=14), and Coelops hirsutus (n=12). Five of the six species were classified as least concern and non-endemic. However, the rare bat species Coelops hirsutus, listed as datadeficient and a Philippine endemic species, was recorded. Macahambus Cave (H' = 1.37) and Kweba de Oro (H' = 0.59) showed low species diversity levels. The BCVI indicated that Kweba de Oro is classified as BCVI 3C (medium priority) and Macahambus Cave as BCVI 4A (low priority). In conclusion, this research shows that the caves of Cagayan de Oro are ecologically valuable and economically important, and are home to rare bat species. It is recommended that conservation measures be initiated to protect and conserve the cave resources of Cagayan de Oro City. Keywords: Endemic, Conservation status, Anthropogenic threats, Vulnerability

Keywords: *Endemic, Conservation status, Anthropogenic threats, Vulnerability*

DESIGNING COMMUNICATION TOOL FOR COMMUNITY AWARENESS AND PROMOTION OF BITAN-AG CREEK REHABILITATION TOWARDS DIGITAL ACTIVISM

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This thesis explored the critical role of community awareness and promotion in Bitan-ag Creek rehabilitation. Grounded in the Social and Behavior Change Communication Theory, researchers at the University of Science and Technology of Southern Philippines (USTP) aimed to leverage digital activism for the creek's rehabilitation. In Phase 1, profiling of the community involved a demographic profiling of the Bitan-ag Creek community, unraveling key characteristics and preferences. The findings indicated encouraging levels of awareness and willingness to participate in Bitan-ag Creek rehabilitation efforts. Phase 2 involved designing the facebook page, the "Uswag Bitan-ag" communication tool, drawing inspiration from literature, elements of design, principles of design, and Universal design principles. This tool, created for visual appeal, engagement, and inclusivity, aligned seamlessly with the identified demographic preferences and community needs. In Phase 3, focus group discussions demonstrated positive perceptions of the Facebook page design. Respondents acknowledged the tool's effectiveness in informing and engaging the youth, with recommendations for varied content, increased post frequency, and a focus on environmental activities. Phase 4 involved an expert evaluation, affirming the tool's effectiveness and design principles. Recommendations included refining balance through white space utilization and enhancing specific design elements for heightened visual impact. This multidimensional approach underscores the thesis's core objectives: assessing community awareness, determining preferred communication tools, and designing an effective tool for community and expert evaluation. The comprehensive findings highlight the transformative potential of digital activism and well-designed communication tools in fostering community awareness and active participation in environmental rehabilitation initiatives, particularly illustrated for the Bitan-ag Creek.

Keywords: *digital activism, technology communication management, multimedia, Bitan-ag creek rehabilitation, designing communication tool*

CORE BEHAVIORAL COMPETENCIES AMONG PRE-SERVICE ENGLISH TEACHERS OF TAGOLOAN COMMUNITY COLLEGE SCHOOL YEAR 2023-2024

Mary Joy B. Aranilla, Jovanicca Joy N. Fosgate, Vanessa R. Mahino, Venjie L. Malu-ay, and Mechelle P. Malupa
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Quality pre-service teacher education is crucial for ensuring excellence in education. Teachers, as the primary agents of learning, play a vital role in equipping students with the knowledge, skills, and behaviors necessary to navigate a rapidly evolving society. To fulfill this role, teachers must be highly competent facilitators in order to ensure that they are well-prepared to meet the demands of the classroom. Thus, this quantitative study explores the core behavioral competencies of 39 pre-service English teachers at Tagoloan Community College during the 2023-2024 academic year. Utilizing stratified random sampling and proportional allocation, the study found that the majority of respondents were females aged 20-22 years old. This demographic trend suggests that younger individuals may be more adaptable to new teaching methods and technologies and highlights the influence of gender roles in encouraging women to pursue teaching careers. Moreover, the study revealed high satisfaction among participants regarding training and development, particularly in lesson planning and the preparation of instructional materials. Additionally, strong competencies were noted in the areas of Self-management, Teamwork, Service Orientation, and Innovation. One-way Analysis of Variance (ANOVA) indicated significant differences in these competencies across different age groups, but no significant differences based on gender. The impact of lesson planning and preparation of instructional materials was significant across all competencies. These findings underscore the importance of current training programs in developing essential skills for pre-service teachers. The results suggest that the English program at Tagoloan Community College effectively cultivates the core behavioral competencies necessary for successful teaching careers.

Keywords: *Pre-service teachers, Training satisfaction, Core behavioral competencies, Competent*

TO WHOM DO WE BLAME DISASTER? A HISTORICAL STUDY OF CAGAYAN DE ORO'S URBAN GOVERNANCE

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The role of local governments has long been recognized as necessary in disaster response. Though, recently, this role has expanded to complexity as natural calamities become more intense, frequent, and difficult to predict. Disaster mitigation, preparedness, and recovery and rehabilitation have been added to the response (4 pillars) following RA 10121 of 2010. Performance of these roles by a local government depends, theoretically, on the performance of the management infrastructure developed for the pillars to function, which the 2010 law is all about. This presentation argues that the most important task to do for the local government is to understand risk and its components, and to target community-based disaster management. A content analysis made by the municipal, later on city, resolutions of Cagayan de Oro spanning the period of 1945-2022 reveals an increase in the number of flash floods and the number of permits granted to residential and large subdivision developers. Two important predictors of disaster were not recognized in the council's deliberations: the increasing population from urban migration and the changing urban landscape. Recommendations are presented on how a local government, such as Cagayan de Oro, can efficiently and effectively implement disaster management.

Keywords: *flooding, urbanization, governance*

PUBLIC SERVICE MOTIVATION AND TURNOVER INTENTION: THE MODERATING ROLE OF PERCEIVED SOCIAL SUPPORT AMONG PHILIPPINE GOVERNMENT EMPLOYEES

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Employee turnover intention is a concern for organizations striving to maintain a stable and productive labor force. The purpose of this quantitative study was to investigate levels of public service motivation and turnover intention, and to provide a comprehensive understanding of the presence of turnover intention even among motivated individuals. Additionally, this study tested perceived social support as a moderator of the relationship between public service motivation and turnover intention. Online questionnaires were used to collect data from 211 government employees from various organizations in the Philippines, such as Philippine National Police (PNP), Local Government Unit (LGU), Department of Education (DepEd), Bureau of Fire Protection (BFP), Department of Agriculture (DA), and others. Perceived social support was found to moderate the relationship between public service motivation and turnover intention ($\beta = -.0851$, $p < .05$). Results showed that as perceived social support increases, the effect of public service motivation on turnover intention will also decrease. Findings of this study have practical and social implications for the management of government personnel in the Philippines. Its original contribution to the theme lies in the significance of establishing supportive work environments to mitigate turnover intentions. Furthermore, government employees need moderate to high perceived social support implying a strong foundation of support necessary in the workplace. In the Philippine setting, Filipino workers are mostly known for their collectivist culture. Hence, decision points are highly influenced by other people and the need for their support. This support comes from employers, colleagues, family, friends, and loved ones/significant other.

Keywords: *perceived social support; public service motivation; turnover intention; erg theory; Philippine government employees*

DESIGN, DEVELOPMENT, AND EVALUATION OF A-CARDS AS A SUPPLEMENTARY MATERIAL IN NAMING ACIDS AND PURE SUBSTANCES AND WRITING CHEMICAL FORMULAS

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Gamification in education has attracted many researchers as it has been proven to open opportunities for students to increase engagement and achieve learning more effectively. The idea behind gamification lies behind the strength of game elements which can be transferred in the educational context. That said, this study aimed to develop and evaluate a card game that can be used as supplementary material in naming acids and pure substances and writing chemical formulas that integrate the building blocks of game elements. This study used a design and development research design and pre-experimental design to assess the card game's effectiveness in enhancing the academic achievement of the respondents. The teacher-evaluators evaluated the card game using the following criteria namely goals and objectives, card design, components and organization, playability and playfulness, and usefulness. Two criteria exceeded the overall garnered mean with a perfect rating of 5.0 (playability and playfulness and usefulness), while the other criteria acquired a mean rating very close to the overall mean of 4.98. Regarding the students' academic achievement, the calculated P-value is less than 0.001. This implies that there is a significant increase in the academic achievement of senior high school (SHS) students after using A-Cards. This result supports the claim of other pre-existing studies that educational card games are effective supplementary tools in increasing students' academic performance. Moreover, students' perception showed satisfaction and a positive overall game experience wherein they were intrinsically motivated to learn and be engaged during the game. The researchers recommend further studies that compare the effectiveness of the traditional method of teaching and the utilization of the educational card game.

Keywords: *Naming Acids and Pure Substances, Game Elements, Supplementary Material*

THE MOTORELA AS A REFLECTION OF THE INGENUITY OF THE KAGAY-ANON

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Mindanao State University – Iligan Institute of Technology/ Xavier University – Ateneo de Cagayan

Using the motorela's history as public transportation, its current state, and the perceptions and beliefs of the people who utilize it, this research sought to find the signs present in the motorela that reflect the technical and social ingenuity of the Kagay-anon respondents. It also analyzed how these signs reflect and represent the ingenuity of the people of the city and, in the process, delved into the reconceptualization of technical and social ingenuity. Using in-depth interviews, observation, and document review, the study found that several signs reflect the technical and social ingenuity of the Kagay-anon respondents: from the motorela's design and visual representations to the shared and lived experiences that people associate with it. These signs reflect these people's adaptability, creativity, and innovative spirit, which is shown in how they communicate, negotiate, and solve problems for what they perceive to be for the betterment of their lives. Technical ingenuity was redefined as how people maximize the use of their resources to meet their needs- even if this entails taking shortcuts on safety and convenience. Social ingenuity shows how values affect ingenuity and how this is deeply rooted in people's emotions, relationships, and connections. This is evident in how they treat each other and perceive the necessity of innovation.

Keywords: motorela, transportation, ingenuity, semiotics, culture and arts studies

ACADEMIC MOTIVATION, RESILIENCE, AND ACHIEVEMENT OF JUNIOR HIGH SCHOOL LEARNERS IN ALTERNATIVE LEARNING SYSTEM (ALS): A STRUCTURAL EQUATION MODELING ANALYSIS

Willy P. Calo
Capitol University

The situation of out-of-school youth and adults in Cagayan de Oro City presents unique challenges that call for a deeper understanding of the role of academic motivation in their educational journeys. For many individuals in this marginalized sector of society, the lack of access to formal education can dampen their motivation to engage in academic activities and pursue educational goals. The present study aimed to examine the relationship between academic motivation, resilience, and the achievements of ALS JHS learners. A total of 314 individuals, consisting of 130 males (41.4%) and 184 females (54.6%), were recruited using convenience sampling method, completed self-report questionnaires on academic motivation scale, academic resilience scale, and academic performance. A structural equation modeling (SEM) was used to test the hypotheses. The structural model with good fit indices reveals the impact of intrinsic academic motivation on academic resilience (β=0.83, p=<.001) and academic achievement (β=0.32, p=.006), highlighting the importance of fostering motivation and resilience in educational settings. Moreover, academic resilience does not act as a mediator in the connection between intrinsic academic motivation and academic achievement. This suggests that intrinsic academic motivation has a direct effect on academic achievement and is not influenced by the level of resilience exhibited by learners. Hence, although resilience is crucial for surmounting challenges, motivation remains an essential element in propelling academic achievement.

Keywords: *academic motivation, resilience, achievement, ALS, SEM Analysis*

THE INFLUENCE OF ORGANIZATIONAL CULTURE AND INDIVIDUAL RESILIENCE ON THE JOB PERFORMANCE AMONG SELECTED HOTEL EMPLOYEES IN CAGAYAN DE ORO CITY

Verla Nena Taal Danuco
Capitol University

Leading hospitality establishments thrive by fostering a quality-centered culture, with a collective commitment to quality management enhancing overall performance. Organizational culture evolves dynamically through intentional nurturing or natural development. This study examined the influence of organizational culture and individual resilience on job performance among hotel employees in Cagayan de Oro City using a descriptive correlational design. Descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (ANOVA, Pearson R) assessed relationships between variables. Multiple regression analysis examined the combined influence of organizational culture and individual resilience on job performance. Findings revealed a strong alignment of organizational cultures with stated values, emphasizing teamwork and effective communication. This fosters employee trust, integrity, and authenticity, contributing to cohesive service delivery and heightened guest satisfaction. However, a need for consistent and timely recognition practices was identified to bolster employee morale and engagement. High levels of resilience among hotel employees, characterized by endurance, adaptability, and courage, positively influenced job satisfaction, motivation, and organizational commitment. Cultivating a culture that supports resilience and continuous learning can enhance employee engagement and overall performance. The research concluded a strong correlation between organizational culture and individual resilience, particularly in communication patterns, collaborative efforts, and shared values. Organizational culture significantly shapes employee resilience levels, with adaptability emerging as a critical predictor of job performance. Enhancing resilience factors through targeted training and development is essential for sustaining high productivity in dynamic hospitality environments.

Keywords: *organizational culture, individual resilience, job performance, hotel employees, influence, work environment*

A QUALITATIVE INQUIRY ON THE ORO HIGALAAY STREET DANCE: ITS HISTORY AND SIGNIFICANCE

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This study examined Cagayan de Oro City's Oro Higalaay Street Dance with a tableau presentation and determined its enhancement to the university's tertiary-level Physical Education Program. This study utilized phenomenological design which is a type of qualitative research that aims to explain the nature of things based on how people experience them. The data were collected through interviews and analyzed using the six phases of thematic analysis. The study explored the evolution of the Oro Higalaay Festival in Cagayan de Oro, focusing on its themes, cultural significance, and integration into the Physical Education (PE) program at the tertiary level. Initially beginning as the Kagay-an Festival in 1995, the festival underwent several theme changes, including the incorporation of cultural and religious elements, culminating in the 2023 Higalaay celebration. This latest iteration emphasized historical, social, economic, and religious milestones, honoring St. Augustine as the city's patron saint. The integration of street dancing into the PE curriculum serves a dual purpose: meeting educational requirements and reintroducing the rich history and cultural heritage of Cagayan de Oro to locals, Filipinos, and migrants alike. Through street dancing, tradition, culture, and expression are preserved while attracting tourism and fostering community unity.

Keywords: *Oro Higalaay Festival, street dancing, nine basic steps, storyboard, Tableau Presentation*

GEN Z STUDENTS PERCEPTION OF FEMALE TRANSFORMATIONAL LEADERSHIP: A COMPARATIVE ANALYSIS

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Historically, leadership has been associated with having authority over a group. However, as the generation progresses, effective leadership requires possessing multifaceted skills to fit the demands of Gen Z. This study aims to examine the perception of Gen Z students of a private nonsectarian university toward female transformational leadership and to see whether the perception of male and female Gen Z students significantly differs. Two hundred twenty-one Gen Z students were surveyed, comprising one hundred fifteen females and sixty males. The study employed descriptive statistics, including frequency, percentage, mean, and T-test, to analyze the data. The results revealed that female leaders were perceived as highly transformational in all four factors of transformational leadership including influential, good communicators, accountable, and emotionally intelligent factors, with an overall mean of 3.84. Female Gen Z students had a higher perception of female leaders as transformational, resulting in an average response of 3.93, compared to male Gen Z students, who obtained an average response of 3.61, resulting in a T value of 4.89. These findings show a significant difference in perception based on the student's sex, showing that female Gen Z students are more likely to perceive female leaders as transformational leaders. This study highlights the strengths and qualities that the generation today values in leadership, which can be helpful for organizations and institutions working to support and develop female leaders.

Keywords: *transformational leadership, female leaders, perceived leadership effectiveness*

BIOHYDROGEN PRODUCTION THROUGH IMMOBILIZATION OF MIXED DARK FERMENTATIVE CULTURE USING STAINLESS-STEEL WOOL AS SYNTHETIC SUPPORT MATERIAL

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Xavier University - Ateneo de Cagayan

The growing global population has had a direct impact on energy demand, and biohydrogen has emerged as a key player in the quest for sustainable solutions to facilitate the decarbonization of the energy industry. Researchers have been exploring the potential of landfill leachate as a raw material for biohydrogen production through dark fermentation, using AD sludge as a mixed culture source. In this study, stainless-steel wool was utilized to immobilize the mixed dark fermentative culture, and it was found that loosely compacted stainless-steel wool resulted in the highest volume of biogas production. The cumulative mean gas production at 14 hours was 31.6 mL. Interestingly, a 12-hour hydraulic retention time (HRT) yielded the highest percentage composition of hydrogen, while a 16-hour HRT produced the highest hydrogen production rate (HPR) at a mean of 0.15819 L H2/L Day. It was observed that increasing the HRT could lead to methanogenesis, resulting in a reduction in hydrogen volume. However, the increase in methane presence was minimal and had an insignificant effect on the HPR at a 16-hour HRT.

Keywords: *dark fermentation; stainless steel wool; biohydrogen production; degree of compactness; hydraulic retention time*

ROMANTIC INVOLVEMENT AND ACADEMIC PERFORMANCE AMONG BSED ENGLISH STUDENTS

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Tagoloan Community College

Romantic relationships while studying significantly impact emotional growth, social experiences, general well-being, and even students' academic performance. This study aims to determine if there is a significant relationship between romantic involvement in terms of time management, the quality of relationships, and academic performance. It draws on the 100 BSED English students of Tagoloan Community College who are romantically involved. This study utilized a concurrent triangulation research design to collect and analyze the data for both qualitative and quantitative results. It also employed a focus group discussion as a method of collecting data. The data gathered shows that most of the respondents are females (78 or 78% of the total respondents), with 40% or 40 of the respondents being in intimate relationships, 18 of the respondents or 18% being in LDR, 17 or 17% of the respondents being in cohabitation, and 15 or 15% of the respondents being married, with 68 or 68% being within the 18-21 age group, and 27 or 27% of the total respondents being in the 22-25 age group. The data also revealed that the student's romantic involvement in terms of time management and relationship quality is at an extensive level. The study reveals that English major students have an extensive level of time management and relationship quality, with most engaging in intimate relationships aged between 18 and 21 years. These students experience companionship and commitment, with a mean GWA of 1.50, indicating excellent academic performance during the first semester of the academic year 2023-2024. However, the results show no significant correlation between romantic involvement and academic performance, suggesting that romantic involvement, whether positive or negative, does not affect students' grades or academic achievements. The study suggests that romantic involvement, whether positive or negative, does not significantly impact academic success.

Keywords: *romantic involvement, BSED English students, concurrent research design, academic performance*

ANALYZING BIOTIC AND ABIOTIC COMPONENTS IN GRASSLAND AREAS AND COMPARING AGROECOSYSTEMS TO NATURAL TERRESTRIAL ECOSYSTEMS AT CENTRAL MINDANAO UNIVERSITY, BUKIDNON

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Central Mindanao University

The interplay between biotic and abiotic components in diverse ecosystems is significant for achieving effective biodiversity conservation and sustainable land management. This study embarked on an extensive field investigation at Central Mindanao University (CMU), Bukidnon, to assess and compare the characteristics and dynamics of agroecosystems, natural ecosystems, and grassland areas. By employing systematic site selection, precise measurements of physico-chemical parameters, and comprehensive sampling of flora and fauna, it aimed to uncover the differences and interactions within these environments. The researcher meticulously gathered data on soil properties, moisture levels, wind patterns, and geographical coordinates. Additionally, structured interviews with local stakeholders enriched our understanding with qualitative insights into ecosystem management practices and perspectives. In the grassland ecosystem of Fullbright, CMU, results showed rich biodiversity comprising 16 families, 21 genera, and 21 species. Meanwhile, tropical forest ecosystem examined tree species diversity and spatial distribution within five quadrats of varying sizes, identifying seven species from five families. Swietenia macrophylla emerged as a dominant species, displaying significant relative density and importance value. The species-area relationship revealed a positive correlation between quadrat size and species richness, underscoring the critical role of spatial distribution in biodiversity patterns. Findings highlighted differences in biodiversity, soil conditions, and ecological dynamics across the agroecosystems, natural forest ecosystems, and grasslands at CMU. Soil pH varied from acidic to neutral, influencing plant species distribution. Wind speed and direction variations played a crucial role in seed dispersal and erosion processes. Insights from stakeholder interviews emphasized the synergy between traditional ecological knowledge and modern agricultural techniques in effective ecosystem management. This approach provides valuable insights for CMU policymakers, land managers, and agricultural practitioners that underscore the need for strategic ecosystem management and sustainable practices to balance productivity with biodiversity conservation, with the imperative of mitigating environmental impacts and fostering resilient landscapes in the face of global environmental changes.

Keywords: *biodiversity conservation, ecosystem management, physico-chemical parameters*

PAGGAMIT NG CANVA PRESENTATION TUNGO SA MABISANG PAKIKIPAGKOMUNIKASYON SA PAGTUTURO NG ASIGNATURANG FILIPINO SA MGA MAG-AARAL NG STI COLLEGE, CAGAYAN DE ORO CITY

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South Cotabato State College

Ang layunin ng pag-aaral na ito ay matukoy ang kabisaan ng paggamit ng canva presentation bilang isang mabisang paraan sa pakikipagkomunikasyon sa pagtuturo ng asignaturang Filipino sa mga mag-aaral ng STI College, Cagayan de Oro (CDO). Sinikap na sagutin ang mga sumusunod: (1) Ano ang magiging kapakinabangan sa paggamit ng canva presentation bilang paraan sa pakikipagkomunikasyon sa mga mag-aaral? (2) Gaano kabisa ang paggamit ng canva presentation sa pagtuturo ng asignaturang Filipino? (3) Gaano nakakaapekto ito sa mga mag-aaral sa aspekto ng pagkatuto? Nilimitahan ang pag-aaral sa mga mag-aaral na may kasalukuyang kinukuhang asignaturang Filipino sa STI College CDO. Ginamitan ng Stratified Random Sampling ang pagpili ng mga respondente at deskriptib-analitikong disenyo. Nakalikom ng sapat na impormasyon ang mga mananaliksik sa kabisaan ng paggamit ng Canva Presentation sa mga mag-aaral ng STI College at natuklasan ang mga sumusunod: (1) malaki ang pakinabang na naidudulot sa paggamit ng Canva Presentation sa akademikong progreso ng mga mag-aaral lalo na sa pagkatuto; (2) ang paggamit ng Canva Presentation ay epektibong paraan sa pagtuturo ng mga guro at produktibong paraan sa pagkatuto ng mga mag-aaral; at (3) malaki ang naidudulot na epekto sa paggamit ng Canva Presentation sa pagkatuto ng mga mag-aaral lalo na sa aspektong napagyayaman nito ang kakayahan ng paggamit ng makabagong kagamitan sa pagkatuto. Nakitaan na mas madaling nauunawaan ang mga aralin gamit ito kung maayos at organisadong naihahanda ng guro ang presentasyon.

Keywords: *Canva, Pagkatuto, Pagtuturo, Presentation, at Teknolohiya*

EFFECT OF GUIDED-INQUIRY TEACHING METHOD ON ACADEMIC PERFORMANCE OF PHILIPPINE PUBLIC SECONDARY SCHOOL GRADE 12 STUDENTS: A QUASI-EXPERIMENTAL RESEARCH

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University of Science and Technology of Southern Philippines

This study investigated the effect of the guided inquiry teaching method on the academic performance of Philippine public secondary school grade 12 students in Electrical Installation and Maintenance. A quasi-experimental design was employed for the study. A pre-test and post-test were conducted for both control and experimental groups. The instruments used for data collection were 30 objective questions tagged as the Electrical Installation and Maintenance Achievement Test (EIMAT). Five experts in the field validated the instrument. To determine the instrument's reliability, Cronbach's alpha formula was used and a reliability coefficient of 0.84 was obtained. Means and standard deviations were used to analyze the descriptive data, while the null hypothesis was tested using a t-test at a 0.5 level of significance. Findings revealed that students with the guided-inquiry method performed better with higher post-test mean scores than those taught using the lecture-demonstration teaching method. Also, findings indicated that the guided-inquiry teaching method makes the students perform better in terms of their performance skills than the lecture-demonstration teaching method. Given the findings, it was recommended, among others, that the guided-inquiry teaching method be adopted in technical colleges and secondary schools for instruction in EIM to improve the academic performance of the students.

Keywords: *guided inquiry, academic performance, lecture-demonstration, teaching method*

DEMOGRAPHIC CONSIDERATIONS IN INSTRUMENT VALIDATION: ENHANCING RELIABILITY AND VALIDITY IN THE CONTEXT OF BTLED STUDENTS

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This study focuses on evaluating the reliability and validity of an adapted instrument designed to assess Learning and Innovation Skills (LIS) and Social-Emotional Skills (SEL) among Bachelor of Technology and Livelihood Education (BTLED) students at a State University and Colleges (SUC) in Northern Mindanao, Philippines. The instrument underwent rigorous testing to ensure its effectiveness across diverse demographic groups, considering factors like age, gender, and academic specialization that may influence measurement properties. A descriptive research design was employed to achieve the objectives of the study. The objectives include examining the reliability and validity of the instrument specifically tailored for BTLED students. The study sampled 71 third-year and fourth-year students who previously completed the course EDU 215 during their second year, focusing on their resilience and adaptability amidst challenges brought by the COVID-19 pandemic. The majority of respondents were female students specializing in Home Economics. Data analysis confirmed acceptable internal consistency reliability for most constructs. Validity assessments, including Heterotrait-Monotrait (HTMT) analyses, demonstrated the instrument's effectiveness in distinguishing between LIS and SEL constructs. Recommendations for enhancing instrument reliability and validity include diversifying the participant pool to address demographic biases and conducting additional validation studies across different academic disciplines.

Keywords: *BTLED students, Instrument Validation, Learning and Innovation Skills, Social-Emotional Skills, SUC*

EMPLOYMENT STATUS OF TAGOLOAN COMMUNITY COLLEGE BSED ENGLISH GRADUATES FROM THE SCHOOL YEAR 2014-2019: A TRACER STUDY

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The employment status of graduates measures the effectiveness of the institution in preparing their graduates for the job market aligned with the program in which they graduated. Thus, this study focuses on the employment status of the Bachelor of Secondary Education (BSED) English graduates from Tagoloan Community College for the school year 2014-2019. By examining and identifying the career paths pursued by BSED-English graduates, the type of employment they have, and the job relevance to their field of study, valuable insights can be gained to contribute to the informed potential enhancement of the curriculum or career support service. This study used a mixed method explanatory sequential research design where the quantitative descriptive method was utilized to describe the profile of the graduates as it existed at the time of the study and explored the course of this issue using a questionnaire. Moreover, the qualitative method was used in obtaining data related to the challenges faced by the graduates in terms of being employed. The findings suggest that the majority of the participants were females, with a significant number of 78 or 86.67% while 69 or 76.67% aged 26-30 years old. A significant proportion of 84 or 93.33% graduates are employed full-time. Notably, 82 or 91.11% also claimed that they acquire regular employment with 70 or 77.78% mostly in the teaching career aligned or relevant to their field of studies whose salaries range from Php26,000-Php30,000 a month. This study also delves into the challenges faced by the graduates in securing their employment and results show three main themes: socio-economic challenges, competencies, and opportunities that comprise of job vacancy, financial constraints, eligibility, communication skills, career services and professional development – where communication skills are the most essential and applicable. Thus, the study recommends multiple teaching strategies be employed in preparing future English educators to acquire effective communication skills. The study further encourages the English Program of Tagoloan Community College to utilize the Appreciative Inquiry or (AI) approach to the oral communication skills of teacher education students.

Keywords: *Employment Status, Tracer Study, Challenges, Appreciative Inquiry*

RELATIONSHIP OF PERCEIVED LEADERSHIP STYLE OF PUBLIC-SCHOOL HEADS AND THEIR TEACHERS' COMPETENCE

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The relationship between teachers' readiness and their school heads' leadership style can have a significant impact on the overall performance and success of educational institutions; hence, this study is intended to investigate the relationship between public school principals' use of situational leadership styles and teachers' readiness levels for various teaching tasks. A modified Teachers' Readiness scale questionnaire from the constructs of Franklin (2000) and a modified teachers' perceptions of their principals' leadership styles from the constructs of Alkhawaldeh et al. (2022) were utilized. A descriptive-correlational design was employed. To organize the data, descriptive statistics were employed to determine their level of readiness and principals' leadership style. Pearson's correlation coefficient (r) was used to measure the significant relationship between the teachers' readiness and their school heads' leadership style. The study's findings show that the teachers' level of readiness and the principals' leadership style were high. Moreover, the findings show that the teachers' readiness and their school heads' leadership style have a significant positive relationship. The researcher concludes that the guiding leadership style of school heads has a significant positive relationship with teachers' readiness in managing various aspects of the classroom, such as instructional time, student behavior, the teaching-learning process, and the learning environment. This study recommends that the school heads continue to provide guidance and support to teachers, as this enhances the teachers' readiness in managing different aspects of the classroom, and they may consider implementing a more structured and collaborative approach to ensure that all teachers receive the same level of guidance, support, and clear instructions, promoting more consistent and effective classroom management.

Keywords: *leadership style, teacher competence, public school heads, teacher readiness*

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- **City Mayor**
- **Governing Board**
- **College President**
  Department Head
  - Office of Lifelong Learning and Professional Development
  - Quality Assurance, Planning, and Sustainability Office
- Assistant Department Head
- Local Economic Enterprise

Academic Affairs and Services
- Higher Education
- Technical Skills and Technology Institute
- Academic Resources and Services Office
  - Registrar
  - Guidance and Counseling
  - Library Services Office
- Office of Curriculum and Instruction
  - Center for Culture, Languages, & the Arts
  - Center for Pedagogical, Innovation and Empowerment
  - Center for Instructional & Learning Materials Development

Finance Services
- Budget & Financial Management
- Payroll Management
- Procurement Services
- Liaison Services

Administrative Services
- Human Resource Management & Development
- Technology, Innovations, & Data Management
- Physical Plant Services
- Health Care Services
- Promotions and Communications Office
- School Canteen

Formation and Social Development Services
- Linkages and Partnerships Office
- National Service Training Program
- Center-Based Extension Services
- Office of Student Affairs
  - Student Welfare Services
  - Institutional Student Programs & Services
  - Student Development Services
- Grant Development & Volunteer Management Office
- Youth Leadership Center

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