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PREFACE

Welcome to the SMU Research Abstracts: Book of Abstracts, Volume 13 (2026). This publication contains a collection of research abstracts completed by faculty members as co-authors, by graduate students, and undergraduate students of Saint Mary's University for the academic year 2025 - 2026.

The studies featured in this volume cover a wide range of topics from education, business, engineering, information technology, health sciences, social sciences, and other fields. These research projects reflect the University's commitment to promoting knowledge, innovation, and solutions to real-world problems.

The research presented here demonstrates our researchers' dedication to improving teaching and learning, supporting community development, advancing technology, promoting sustainability, and addressing current social concerns. Through these studies, Saint Mary's University continues to contribute meaningful knowledge that can benefit both the academic community and society.

We express our heartfelt gratitude to all researchers, faculty promoters, panel members, administrators, and academic leaders whose dedication and support made this publication possible. Your commitment to scholarly inquiry, academic excellence, and service reflects the Marian educational tradition of Saint Mary's University.

Through your collective efforts, SMU continues to advance the generation and dissemination of knowledge, cultivate critical and ethical thinkers, and contribute to the transformation of communities and society. These endeavors further strengthen the University's identity as a premier CICM Catholic educational institution, inspired by Christ's mission and dedicated to the integral formation of persons who embody communion, excellence, innovation, and social responsibility.

We hope this book will serve as a useful reference and source of inspiration for students, educators, researchers, and other stakeholders. May it encourage continued inquiry, collaboration, and innovation in the pursuit of knowledge and service to society.

MELANIE G. SARMIENTO, PhD
Editor-in-Chief

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**ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) PRACTICES
AND FINANCIAL PERFORMANCE OF COOPERATIVES: NEXUS FOR A
UNIFIED SUSTAINABILITY FRAMEWORK**

Den Mark C. Lorenzo & Regina D. Ramel

This quantitative-qualitative study assessed the cooperatives' level of adherence to Environmental, Social, and Governance (ESG) standards and their financial performance using the PISO and STEPS frameworks, while investigating the relationship between these practices and profile and financial performance. It involved large multi-purpose cooperatives in Nueva Vizcaya where the majority are in operation for 21 years and with members of 5,000 above. Data gathered were treated using frequency, percentage, mean, standard deviation, while Pearson r and Spearman ρ were utilized to determine relationships. Results revealed that even though cooperatives are aware of ESG principles, implementation remains to be moderate. Further, while the cooperatives are making commendable progress in governance, there is a clear need to strengthen the environmental and social dimensions of ESG to achieve balanced and impactful sustainability outcomes. Most cooperatives faced challenges in their financial performance using both PISO (pre-pandemic) and STEPS (post-pandemic) criteria, which were due to unstable economic conditions during the pandemic and the CDA's changing thresholds in the financial evaluation criteria after the pandemic, making it a difficult time for cooperatives. In addition, older and larger cooperatives in membership size have had more opportunities to integrate ESG standards into their governance structures and community engagement strategies, while those that actively implement ESG principles tend to perform better financially. With the above, the cooperatives may adopt and implement a sustainability framework that incorporates ESG standards anchored on the sustainable development goals, while efficiently complying with the financial indicators mandated by CDA.

Keywords: CDA, financial efficiency, performance audit, sustainable development goals, sustainable operations

**EXPLORING THE LIVED EXPERIENCES OF ACADEMIC
RESEARCHERS: BASIS FOR A CONTEXTUALIZED RESEARCH
PUBLICATION SUPPORT MODEL**

Luther F. Castillo & Christopher Allen S. Marquez

Research publication is a global standard and an institutional expectation in higher education institutions. However, other than the challenges early-career researchers face, they need a context-sensitive support model to contribute to this call. This study explored the lived experiences of academic researchers in public and private rural universities to understand how they engage with publication in reputable journals and to develop a support model grounded in practice. Using Husserl's transcendental phenomenology, ten participants were purposively selected based on inclusion and exclusion criteria. Data was collected through semi-structured interviews and analyzed using epoché, phenomenological reduction, and imaginative variation to identify significant statements, meaning units, and thematic clusters. Findings indicate that researchers experienced publication as a gradual process of orienting to unfamiliar scholarly environments. Mentorship, peer support, personal motivation,

procedural understanding, and institutional scaffolding shaped their engagement. Participants applied iterative drafting, revision, adaptive strategies, and time management to balance publication tasks with institutional responsibilities. Based on these insights, a contextualized research publication support model was developed, organizing experiences from initial uncertainty to sustained engagement. The model integrates orientation with relevant sources, motivational reinforcement, mentorship, procedural guidance, and institutional support, reflecting the adaptive, context-sensitive nature of publication efforts. Implications include the design of flexible mentorship programs, intensive procedural workshops, and feasible institutional support strategies. Future research may explore publication practices in other rural higher education contexts or test the implementation, impact, and refinement of the support model to ensure sustainability and wider applicability.

Keywords: early-career researchers, higher education, phenomenology, reputable journal, Scopus, web of science

SoGS-SR-03

**TEACHERS AND LEADERS' SELF-REFLECTION ON THE CAMBRIDGE
STANDARDS VIS-À-VIS STUDENTS' PERFORMANCE
MARKS:TOWARDS AN ENHANCED CURRICULUM IMPLEMENTATION
PLAN**

May Sicat Saquing & Samuel R. Soliven

This study examined the implementation of the Cambridge Standards by Sekolah Mutiara Harapan's teachers and leaders, through self-reflection on the standard indicators in the following domains: values and attributes, culture and environment, skills and practices, innovation and improvement, and community engagement, and the performance of students in internal assessments (English, Mathematics and Science) and external assessments (English, Mathematics, Biology, Chemistry, Physics, Business Studies and Geography) as a result of the said implementation. The self-reflection questionnaires, researcher-based interviews, and supporting documents were utilized, and the data were analyzed using an exploratory mixed-methods design. Stepwise regression was done to study the effects of internal assessment marks in English, Mathematics, and Science on the external assessments. Overall, the teacher domains reported as fully implemented were classroom culture and environment and teaching skills and practices, while community engagement was identified as partially implemented. The leaders largely implemented all the leader domains. The students' overall mean marks for both internal and external examinations are passing, based on the school and Cambridge standards, with internal English, Mathematics, and Science as predictors of external examination marks. The most pressing challenges in implementing the standards are time management and a lack of professional development. An enhanced curriculum implementation plan was developed to enhance the school's curriculum implementation and improve stakeholders' learning experiences. As the school continuously improves student performance, it shall conduct regular audits of standards compliance to monitor, evaluate, and foster innovation relative to the plan.

Keywords: assessments, Cambridge standards, implementation plan

PRE-SERVICE TEACHERS' EXPERIENCES, METACOGNITION AND PERFORMANCE IN CODING AND DATA MANAGEMENT USING RSTUDIO OR MS EXCEL: BASES FOR PROFESSIONAL DEVELOPMENT

Orville D. Hombrebueno & Melanie G. Gurat

This study investigated the integration of RStudio or MS Excel in teaching coding and data management to pre-service teachers enrolled in the Mathematics in the Modern World course at a state university in the Philippines within a flexible learning environment. Employing a quasi-experimental pretest-posttest two-group design as the quantitative phase in an explanatory sequential mixed methods approach, the research compared the effectiveness of RStudio to Microsoft Excel in supporting student learning. Quantitative results showed significant gains in both initially comparable groups, with no statistically significant difference in posttest scores between the experimental and positive-control groups. However, many students, especially those using R and RStudio, struggled with complex tasks such as hypothesis testing, selecting appropriate statistical tests, creating visualizations, and interpreting multi-step statistical results. These difficulties were attributed to limited prior experience, cognitive load, and the challenges of coding-based tools in a flexible learning setup. Qualitative findings revealed that while students initially encountered difficulties and anxiety, structured guidance and practice helped build confidence and appreciation for R and RStudio. However, students who utilized MS Excel exhibited slightly higher levels of metacognitive skills compared to those who used R & RStudio. The study highlights the need for scaffolded support, hands-on learning, and professional development to build digital literacy, coding fluency, and independent statistical reasoning. The results have implications for curriculum design, teacher preparation, and broader adoption of open-source software in mathematics education, supporting and preparing future educators with globally competitive and relevant skills in the 21st century. A comprehensive training design is proposed to equip mathematics teachers with skills to teach coding and data management using R and RStudio effectively.

Keywords: educational technology, mathematics education, open-source tools, quasi- experiment, statistical reasoning

PROBLEM SOLVING SKILLS AND MATHEMATICAL MENTAL STRUCTURE OF COLLEGE STUDENTS TOWARD AN INTERVENTION FRAMEWORK

Ella Tricia M. Aquino & Melanie G. Sarmiento

Intervention frameworks serve as strategic foundations for improving learning outcomes, guiding educators in delivering timely and effective mathematical support. This study developed an intervention framework based on the problem-solving skills and mathematical mental structure of first-year college students at Kalinga State University during the Academic Year 2025-2026. Grounded in an evidence-based and systematic approach, the research integrated quantitative and qualitative designs to capture the complexity of students' mathematical mental processes. Data was collected from college students through APOS-based self-assessment and problem-solving tasks, revealing a weak schema, beginning problem-solving skill,

and a critical learning transition gap that informed the design of targeted interventions. Building on these findings, the development phase synthesized results from the think-aloud interviews and relevant literature to construct a structured, responsive intervention framework. The study proposed the Mathematics Learning Transition Gap Intervention Framework with Screen-Target-Reinforce-Implement-Diagnose-Evaluate (STRIDE) stages. This framework aligned instructional undertakings with learners' cognitive development, offering a systematic approach to enhancing conceptual understanding and problem-solving performance. While initial validation supported its relevance and coherence, further empirical testing is recommended to establish its effectiveness across diverse contexts through further validation, implementation, adaptation, and presentation to institutions, educational organizations, and conference platforms. Furthermore, mathematics instructors and curriculum implementers are recommended to support students at the beginner level by providing non-routine problems to build problem-solving skills, while incorporating reflective questioning, concept maps, and worked examples to help learners progress toward deeper conceptual understanding in the APOS mental structure.

Keywords: cognitive process, functions and their graphs, mathematical intervention

SoGS-SR-06

A MONOGRAPH OF MICROSCOPIC IMAGES OF SELECTED PHILIPPINE PLANT AND ANIMAL SPECIES AS SUPPLEMENTARY MATERIAL FOR LEARNING CELL BIOLOGY

Allan Gregy V. Balic & Arlene L. Tabaquero

This study developed a *Monograph of Microscopic Images of Selected Philippine Plant and Animal Species* as supplementary material for teaching cell biology. The creation of this monograph was necessary to address the lack of accessible laboratory resources and to provide localized, research-based visual materials that connect scientific learning with Philippine biodiversity. Using a descriptive developmental design, the study documented at least three cellular structures from three plants—*Tawa-tawa* (*Euphorbia hirta* L.), *Pansit-pansitan* (*Peperomia pellucida* L.), and *Papait* (*Glinus oppositifolius* [L.] A. DC)—and three freshwater fishes—*Bangus* (*Chanos chanos* [Forsskål, 1775]), *Tilapia* (*Oreochromis niloticus* [Linnaeus, 1758]), and *Dalag* (*Channa striata* [Bloch, 1793]). Tissue samples underwent fixation, dehydration, paraffin embedding, microtome sectioning, and hematoxylin-eosin staining before microscopic observation. Images were captured in high resolution, labeled, and integrated with QR code-linked videos to promote interactive learning. Results showed that the three plant species shared common structures, including the epidermis, cortex, and vascular bundles, with trichomes being distinctly observed in *Tawa-tawa* and *Papait*. The animal specimens exhibited well-defined hepatocytes, cardiac muscles, blood cells, and gill lamellae, confirming species-specific histological patterns. The developed monograph was evaluated as “Highly Valid”, affirming its scientific accuracy, clarity, and educational usefulness. The study concludes that the monograph effectively combines microscopic documentation, descriptive narratives, and QR-assisted features, making it a feasible and valuable learning resource. It is recommended for use in schools with limited laboratory facilities and serves as a model for producing localized, research-based instructional materials in biology education.

Keywords: cell biology, educational monograph, microscopy, Philippine biodiversity, QR code learning

ESTATE PLANNING AMONG SELECTED EMPLOYEES OF A PRIVATE UNIVERSITY IN NORTHERN PHILIPPINES: FROM AWARENESS TO ACTION

Jeanette R. Mania & John Lindy R. Soriano

Estate planning, encompassing the management and distribution of assets post-mortem through legal mechanisms such as wills, trusts, and lifetime gifts, is a critical aspect of financial planning that ensures financial security, minimizes inheritance taxes, and mitigates family disputes. While it is necessary to ensure the proper and desired distribution of one's possessions after death, the extent that it is practiced remains in question as death is a taboo topic in the Philippines. Using a quantitative-qualitative approach, the paper investigated the level of knowledge on estate planning among employees at a private university in Northern Philippines. It quantitatively assessed how demographic variables—sex, age, marital status, educational attainment, asset categories and socioeconomic status—influence employees' knowledge on estate planning. It also qualitatively studied the benefits and challenges faced with estate planning. The study found that there was a low level of knowledge on estate planning, and results did not statistically differ based on sex, age, marital status, socioeconomic status, and asset category. It was found that there was a significant difference in the level of knowledge when grouped by educational attainment, with juris doctor having a significantly higher level of estate planning ($p < 0.05$). It also found that benefits of estate planning included financial benefits, and taking care of loved ones. Challenges faced in estate planning included lack of awareness, lack of finances and properties, and lack of guidance. Hence, an intervention through a seminar was proposed. The proposed seminar would discuss estate planning, methods of estate planning, and open consultation.

Keywords: asset distribution, financial education, financial literacy, inheritance taxes, trusts, wills

INFLUENCE OF E-COMMERCE PLATFORMS ON MILLENNIAL PURCHASES: PREMISE FOR STRATEGIES OF NEW ENTRANTS

Glenn Mark M. Pasardan & Caroline M. Acosta

The study explored how e-commerce platform features influenced the purchasing behavior of millennial consumers in the key cities of Isabela, Cagayan Valley. It aimed to propose strategies for new e-commerce entrants. Mixed methods were used, combining quantitative data with qualitative responses. Results showed that most respondents were aged 28 to 33 and were Ilocano and Tagalog women. Most were employed and had low to middle incomes, frequently purchasing beauty, fashion, and lifestyle items on Shopee and TikTok Shop. Complex buying behavior, characterized by careful decision-making and brand comparisons, was the most common pattern. While users appreciated platform functionality, such as ease of navigation, trust, and user experience, these factors were more influential in driving purchase decisions. Job status, income, frequency of purchase, and platform used significantly affected perceptions. In contrast, age, gender, ethnicity, type of purchase, and buying behavior showed limited impact. The study proposes trust-focused, mobile-optimized, and culturally relevant strategies for new entrants. These insights

offer a foundation for developing inclusive, user-centered e-commerce platforms in emerging markets.

Keywords: Cagayan Valley, e-commerce platforms, millennial consumers, new market entrants, purchasing behavior

SoGS-SR-09

**KINDERGARTEN TEACHERS' PEACE EDUCATION AWARENESS,
INSTRUCTIONAL PRACTICES AND CHALLENGES: BASIS FOR
PROTOTYPE TEACHER-TRAINING AND INSTRUCTIONAL
GUIDES IN PEACE BUILDING**

Kevin Marf B. Saquing & Jenifer C. Gacusan

The implementation of peace education is among the strategic directions to realize the international 2030 goals towards sustainable development. As the global community steps forward towards the target year, the education society assumes a responsibility to form better learners of the present context and of the next generations to come. Employing descriptive-comparative research design, this study determined the level of peace education awareness of the kindergarten teachers who are actively teaching in the public schools in the Schools Division Office of Nueva Vizcaya in terms of their content knowledge, values, and skills concept, and compare these according to the teachers' professional profile. With a qualitative research design, this study described the practices and challenges of the teachers in integrating peace concepts into instruction. Results revealed that the teachers are very aware of the content, related attitudes/values, and skills concepts related to peace education. Their levels of peace education awareness in the three subcomponents do not vary statistically when they are grouped according to their length of service. However, those who have a specialization in early childhood education have shown a better level of familiarity and knowledge in the skillful implementation of peace education at the kindergarten level. Similarly, those who have received training and are in program-pioneering schools have a better level of peace education awareness in all subcomponents. The teachers integrate peace concepts in the instructional process in a variety of ways but still encounter challenges that affect the successful implementation of peace-related initiatives. These salient findings inspired the development of prototype teacher-training packages and instructional guides for kindergarten teachers to integrate peace education into the kindergarten curriculum, following the Department of Education's basic standards.

Keywords: contextualized resources, kindergarten education, level of awareness, peace education, sustainable development goals

SoGS-SR-10

**EARLY CHILDHOOD EDUCATION IN THE LENS OF PRE-SERVICE
TEACHERS: FOUNDATIONS FOR A MICRO-CREDENTIAL
PROGRAM**

Marianne C. Eugenio & Kevin Marf B. Saquing

This study explored Early Childhood Education (ECE) through the lens of pre-service teachers at Nueva Vizcaya State University (NVSU), College of Teacher Education - Bambang Campus, during the School Year 2025-2026, to establish foundations for a micro-credential program. A descriptive-correlational design surveyed 32 elementary

pre-service teachers, assessing knowledge and readiness competencies across seven ECE domains using a validated instrument. Findings indicate overall developing knowledge levels, with peaks in child growth, development, and learning - excelling in developmental characteristics but needing improvement in delay identification, health, safety, nutrition, well-being, where proficiency was evident in record-keeping but below par in modeling habits, assessment, family, and professional development. Knowledge competency in the curriculum was found to be at the beginning level, with evident gaps in special needs, sequencing, learning environments, and limited inclusivity. Readiness mirrored this proficiency, with respondents reporting developing competency in child growth, development and learning; assessment; family; and professional areas, but at the beginning level in emotional regulation and in curriculum implementation, particularly in managing disengagement, emergencies, and spatial equity. Spearman's rank correlation revealed significant positive links: knowledge in curriculum (Domain C) with readiness in child growth, development and learning (Domain A); learning environments and experiences (Domain D) bridged readiness in Domains A and D. Challenges centered on classroom management, learner engagement and behavior, and low confidence, resulting from mismatches between upper elementary training and ECE demands. These outcomes affirm a solid foundation but highlight gaps in practical translation, inclusivity, and engagement, and advocate a micro-credential program with targeted modules across all domains, but with emphasis on integration, emergency response, and culturally responsive strategies to bolster ECE knowledge and readiness competency levels of the respondents.

Keywords: classroom management, continuing learning, formative assessment, pedagogical competency, play-based

SoGS-SR-11

PROGRAM COMPLIANCE BY KEY IMPLEMENTERS AND TEACHERS OF LEARNERS WITH SPECIAL EDUCATIONAL NEEDS IN A GENERAL COMPREHENSIVE HIGH SCHOOL: TOWARDS AN ENHANCED ACTION PLAN

Glenda P. Mendoza & Lorvin M. Adducul

Learners with special educational needs are expected to rise in number in public high schools, underscoring the need for secondary teachers to be competent in the implementation of Special Needs Education. This study on Program Compliance by Key Implementers and Teachers of Learners with Special Educational Needs in a General Comprehensive High School: Towards an Enhanced Action Plan sought to describe the profile of the key implementers of SNED and secondary school teachers teaching LSENs, identify the types of disabilities and difficulties handled, determine the implementation compliance of SNED according to various indicators, and determine the experiences and challenges encountered by the key implementers and secondary school teachers teaching LSENs. It used a descriptive-evaluative approach. The qualitative part of the study complemented quantitative data to substantiate the results of the data gathered. The participants of this study were 46 key implementers and teachers handling special needs education in Nueva Vizcaya General Comprehensive High School. The researcher-made survey questionnaire was designed to gather data on the compliance of NVGCHS in the implementation of Special Needs Education. Findings revealed that half of the key implementers of SNED in NVGCHS are newly hired teachers in public schools, and most have less than five years in the profession. All of them are non-SNED majors and do not have adequate preparation in SNED, which affects their performance in teaching LSENs. It

is also concluded that the school is partially compliant with all the aspects of implementation compliance with special needs education. Most of the indicators of the SNED Program implementation are partially compliant. It is recommended that the school use the proposed SNED Action Plan presented in this study.

Keywords: assessment, competent, disability, implementation, secondary school teachers

SoGS-SR-12

DIGITAL INNOVATION IN TEACHING SENIOR HIGH SCHOOL BIOLOGY: UTILIZATION, CHALLENGES, AND OPPORTUNITIES

Karen Joy Sagabaen & Analyn A. Guevara

Integrating digital innovation in biology education has significantly reshaped traditional pedagogical practices by offering students more dynamic, interactive, and student-centered learning experiences. This study examined the extent of utilization, the challenges encountered, and the opportunities presented by digital innovations in teaching senior high school biology in selected public schools in Quirino Province, Philippines. Adopting a quantitative descriptive research design, data were collected from senior high school biology teachers through survey questionnaires to document their experience in incorporating digital resources such as virtual laboratories, simulation software, educational applications, and online learning platforms. The findings revealed that biology teachers actively integrate a range of digital tools to increase student motivation, foster active participation, and enhance comprehension of complex biological concepts. However, the degree of integration remains constrained by recurring challenges, including inadequate technological infrastructure, unstable internet connectivity, limited professional training, and occasional resistance to adopting new instructional modalities. These barriers hinder the full realization of the educational potential of digital innovations. Despite these challenges, the study highlights the numerous opportunities that digital integration can provide. Teachers recognized the capacity of technology to support differentiated instruction, provide access to diverse open educational resources, and encourage collaborative and inquiry-based learning. Moreover, digital innovations were identified as effective in strengthening critical thinking, problem-solving, and analytical skills, which contribute to improved student academic performance. Hence, the study affirms that while digital tools are utilized in biology instruction, their optimal impact is limited by both systemic and pedagogical constraints. To address these gaps, a structured training plan is proposed to enhance the digital competencies of biology instructors, empower them with confidence in using educational technologies, and prepare them to overcome implementation barriers. The proposed training program is expected to strengthen instructional practices and enrich student learning experiences. Finally, the study recommends the dissemination and implementation of this training initiative across schools in the division to maximize its long-term impact and foster a sustainable culture of innovation in science education.

Keywords: digital competencies, digital resources, educational technology, technology integration

SoGS-SR-13

BRIDGING GLOBAL GOALS AND LOCAL LEARNING: SDG INTEGRATION IN SOCIAL STUDIES INSTRUCTION

Jones K. Liwan & Kenneth L. Maslang

Integrating the Sustainable Development Goals (SDGs) into social studies strengthens learners' understanding of global issues while connecting these to local realities and civic responsibilities. As schools strive to cultivate informed and future-ready citizens, examining how the SDGs are integrated into social studies instruction has become increasingly important. This study examined the integration of the SDGs into classroom practices in selected secondary schools in Nueva Vizcaya and utilized these insights to develop a context-driven teaching package. Using a combination of quantitative and qualitative approaches, the study gathered quantitative data through a validated survey on teachers' awareness, perceptions, and level of SDG integration. Qualitative data, obtained from open-ended responses, provided deeper insight into their experiences and challenges. Findings showed that teachers frequently incorporated SDG-related themes, with stronger emphasis on quality education and weaker coverage of environmental conservation and climate action. Although educators demonstrated a willingness and creativity in contextualizing the SDGs, they encountered persistent barriers, such as limited materials, insufficient training, and demanding curriculum requirements. The results underscore the need for enhanced professional development, localized learning resources, and sustained curricular support to strengthen SDG-based instruction. Future research may explore intervention models, long-term student outcomes, and comparative studies across regions to further advance sustainability education in the social sciences.

Keywords: curriculum innovation, global citizenship, localized learning, partnership for the goals, quality education

SoGS-SR-14

MAPPING THE DEVELOPMENT OF ALDERSGATE COLLEGE (1989-2023): STRENGTHENING THE ACIAN BRAND

Marijule Suarez Manuel-Parungao & Christopher Allen S. Marquez

This study documented Aldersgate College's developmental journey from 1989 to 2023, using the lens of institutional theory to appreciate how its organizational environment, institutional boundaries, structure, and accountability systems have evolved. Employing a qualitative research design, the study used institutional theory to provide a rich, insider account of the college's transformation. Data collection methods included participant observation, semi-structured interviews, and document analysis with 25 key informants, comprising administrators, faculty, staff, students, and alumni. Findings revealed that Aldersgate College operates in a hybrid institutional environment, non-sectarian but strongly influenced by its Methodist heritage, which continues to shape its educational orientation, cultural identity, and values. The organization's mission and vision statements have changed in response to these influences, emphasizing academic excellence, innovation, and global competitiveness. The demands of accreditation, external regulation, and other factors

have helped define institutional boundaries. In response to external regulations, internal reforms reorganized programs, governance, and priorities, and accreditation requirements, making the boundaries more clearly defined. Alongside introducing innovations in academic programs, enrollment strategies, human resource development, and campus expansion, subsequent administrations improved the mission, vision, and goals. Leadership transitions enhanced the institution's resilience and adaptability. Student-centered approaches, technology integration, community relevance, and holistic student development became more prominent in research, instruction, and extension activities. Aldersgate College's growth illustrates how organizations maintain legitimacy through balancing tradition and innovation, spirituality and professionalism, and local commitments and global aspirations. The study recommends incorporating institutional history into a planned Culture and Arts Center and establishing a Heritage and Innovation Council. Ultimately, Aldersgate College's legacy is a dynamic narrative that continues to shape its identity, mission, and future path.

Keywords: academic innovation, cultural heritage, excellence, historical integration, institutional theory, spirituality

SoGS-SR-15

ENHANCING CIVIC COMPETENCIES AMONG FRESHMEN THROUGH INQUIRY-BASED LEARNING APPROACH IN THE CONTEXT OF A HIGHER EDUCATION INSTITUTION

Diana Jane L. Oden & Kenneth L. Maslang

This study examined the effectiveness of the Inquiry-Based Learning (IBL) approach on enhancing civic competencies among first-year students along the following domains: civic literacy, critical thinking skills, problem-solving skills, communication, and collaboration. The study employed a mixed-methods design, involving 356 first-year students divided into control and experimental groups. The experimental group received instruction following the 6E Inquiry Model by Peter & Stout (2015), while the control group was taught using traditional lecture methods. A researcher-developed pre-test and post-test instrument was used to measure students' levels of civic competencies before and after the intervention. The data were analyzed using a paired-samples t-test to determine whether there were significant differences in performance between the two groups. Findings revealed that both the control and experimental groups demonstrated slight improvement in their civic competency domains after the implementation of the teaching approaches. Although the intervention yielded limited improvement, the results remain valuable, as they highlight the challenges, limitations, and areas for improvement of the proposed intervention. The findings further suggest that effective instructional implementation, adequate intervention duration, and learner engagement are important factors in strengthening students' civic competencies. Based on the results, a learning material is proposed as an educational reference for educators, providing strategies, enrichment activities, and performance tasks to transform traditional classrooms into environments that encourage curiosity, active participation, and active learning.

Keywords: civic competencies, civic literacy, Inquiry-Based Learning (IBL)

SoGS-SR-16

REVITALIZING A LOCAL GREEN LEGISLATION VIS-À-VIS SUSTAINABLE DEVELOPMENT GOAL 13

Rheena Nina S. Salinas & Erwin D. Naval

This study examined the alignment of policy mechanisms between the Environment Code of Nueva Vizcaya and the United Nations Sustainable Development Goal 13 (Climate Action). Through a qualitative-quantitative design involving comparative content analysis and surveys, the research evaluated policy coherence, stakeholder knowledge, and implementation effectiveness across the domains of climate mitigation and adaptation. Respondents included representatives from government, academe, church, and community sectors. Results showed partial alignment between the local code and SDG 13, with strong convergence in areas like climate resilience, education, and policy integration. However, gaps remain in financing mechanisms and global coordination. Findings also revealed generally poor stakeholder knowledge of climate provisions, contributing to ineffective policy implementation. Statistical analysis indicated significant differences in knowledge and implementation levels across groups and domains. The study underscores the need for improved policy awareness, grassroots engagement, and intersectoral collaboration to localize climate action effectively. A policy brief is proposed to guide amendments to the Environment Code, ensuring stronger alignment with international climate standards. The research highlights the urgency of institutional and moral commitment in addressing climate risks at the local level.

Keywords: climate change, partnership for the goals, quality education, sustainable municipalities

SoGS-SR-17

SECONDARY SCHOOL MATHEMATICS TEACHERS' DIGITAL PRESENTATION SKILLS AND SELF-CONFIDENCE TO SUPPORT BLENDED LEARNING: BASIS FOR A DIGITAL ENHANCEMENT MANUAL

Jinjine T. Gandeza & Gloria Vicky A. Antonio

This study assessed teachers' digital presentation skills and self-confidence in integrating information and communication technology (ICT) for blended learning support and determined the relationship and variations of the different dimensions of these variables. The findings indicated that overall, teachers demonstrated very satisfactory or very high level of digital presentation skills, with content quality and accuracy receiving the highest scores. Self-confidence in integrating ICT for blended learning was generally high, with school technology development scoring the highest among the dimensions. In terms of the levels of digital presentation skills, significant differences were observed between content quality and instructional quality, content quality and technical quality, instructional quality and accuracy, technical quality and accuracy, and technical quality and delivery. In terms of self-confidence in integrating ICT, there were significant differences between “*facilitate or inspire and*

school technology development, design and development and school technology development, and professional growth and school technology development.” When grouped by year level taught, significant differences were found in teachers' content quality and instructional quality in digital presentations. However, there were no significant variations in teachers' self-confidence levels across dimensions of integrating ICT when grouped by grade level. Additionally, notable negative correlations were observed between content quality and design and development, modeling digital professionalism, digital citizenship and responsibility, and professional growth. These findings serve as a basis for the development of a digital enhancement manual, focusing on improving teachers' digital skills in areas with lower ratings. This research aimed to enhance the quality of digital teaching in secondary school mathematics, ultimately benefiting both educators and students.

Keywords: digital professionalism, digital tools, online learning, technical quality, video-recorded lectures

SoGS-SR-18

EVALUATING MATHEMATICS CONTENT ON SOCIAL MEDIA PLATFORMS FOR CRAFTING CONTENT CREATOR'S GUIDELINES

Christony G. Duyapat & Melanie G. Gurat

Students nowadays increasingly rely on online platforms for learning as social media transitions from a source of entertainment into a vital space for educational content. With this shift, educators and content creators must ensure the quality of instructional videos to prevent misconceptions. This study evaluated mathematics content on social media to develop research-based guidelines for mathematics content creators. It aimed to assess materials in terms of curricular, technical, pedagogical, didactic, and accessibility aspects; describe the processes and challenges of Filipino mathematics content creators; examine students' preferences and learning experiences; and integrate the findings into actionable guidelines. The study employed descriptive quantitative, qualitative, and design and development research approaches. Data was gathered from three evaluators, four content creators, and 38 junior high school students, with 13 participating in focus group discussion. Instruments included standardized observation scale, semi-structured interview guide, and preference checklist. Results showed that mathematics content generally demonstrated good quality in terms of curricular, technical, and pedagogical aspects but needed improvements in didactic structure and accessibility. Content creators emphasized curriculum alignment, careful resource preparation, intentional engagement strategies, maintaining accuracy and accessibility, navigating technological challenges, and sustaining production through emotional resilience and support for the networks. Students preferred familiar and accessible platforms with structured and visually engaging content delivered through step-by-step explanations, real-life examples, bilingual Language, and humor, and they valued creators who are relatable and responsive. Based on these findings ten research-based guidelines were proposed. These may serve as references for educators and content creators in producing quality, student-centered social media-based mathematics videos grounded in the collective insights of experts, content creators and students.

Keywords: content creation, instructional design mathematics education, online learning, student engagement

SoGS-SR-19

STUDENTS' MASTERY LEVELS IN VOCABULARY, TRANSLATION, AND VISUAL REPRESENTATION IN MATHEMATICS 6: TOWARDS CREATING A HANDBOOK IN IMPROVING PROBLEM-SOLVING SKILLS

Eideleen C. Reyes & Dominga C. Valtoribio

Problem-solving has been a big challenge for students in mathematics. This research aimed at creating an educational resource which could aid student problem-solving through an evaluation of their vocabulary, translation and visual representation capabilities in mathematics using descriptive-correlational design. Grade 7 students were evaluated on how they could translate mathematical sentences and symbols while assessing their ability to create visual problem representations and recognize mathematical terms and symbols across four content areas that included number and number sense, patterns and algebra, measurement and geometry, statistics and probability. The findings revealed low mastery across all three competency areas. Students encountered their greatest challenge in visual representation exercises, mathematical vocabulary, and symbols. The students' translation proficiency was below the expected performance level. Students achieved their highest performance in number and number sense, followed by measurement, geometry, and statistics. Translation skills showed the highest positive correlation with problem-solving performance, whereas vocabulary abilities and visual representation showed weak positive relationships. The research findings led to the development of a handbook that provides problem sets designed to specifically enhance students' translation skills, along with vocabulary learning and visual thinking.

Keywords: mathematics education, problem solving, translation skills, visual representation, vocabulary mastery

SoGS-SR-20

PREDICTIVE ROLE OF MOTIVATION, MATHEMATICAL CREATIVE THINKING, AND DIGITAL LITERACY IN PRE-SERVICE TEACHERS' PROBLEM-SOLVING SKILLS: BASIS FOR INTERVENTION PLAN

Nover Luke T. Saldares & Analyn A. Guevara

Problem-solving skills are important as they can promote systematic thinking, decision-making, and perseverance. When these skills are developed effectively, they can support the application of knowledge outside the classroom, fostering more independent, confident, and competent individuals. This study examined the predictive role of pre-service teachers' motivation, mathematical creative thinking (MCT), and digital literacy on their problem-solving skills (PSS). Descriptive statistics were utilized to describe the variables. At the same time, multiple linear regression was used to identify significant predictors of problem-solving skills. The respondents consisted of 142 pre-service teachers enrolled in mathematics and elementary education programs. Data was gathered using validated instruments. The findings

revealed that pre-service teachers were sometimes motivated, exhibited test anxiety at a usually anxious level, were digitally literate, and had a failed level of MCT and PSS. Among the variables examined, only MCT emerged as a significant and positive predictor of problem-solving skills. Further analysis also identified MCT indicators, including flexibility, authenticity, and elaboration, as significant predictors of PSS. Consequently, the Mathematical Creative Thinking–Enhanced Problem-Solving Intervention Plan (MCT-EPIP) was developed to address the identified gaps, including strategies to reduce test anxiety. The MCT-EPIP is recommended for evaluation, adoption, and testing across different institutional settings to establish its effectiveness.

Keywords: intervention development, mathematics education, non-routine problems, problem-solving competence, teacher education

SoGS-SR-21

PRACTICES AND CHALLENGES OF SECONDARY SCHOOL MATHEMATICS TEACHERS IN EMPLOYING FORMATIVE ASSESSMENT STRATEGIES IN TEACHING AND LEARNING

Joyce U. Dao-asen & Rommel S. De Gracia

Formative assessment strategies play a critical role in developing students' engagement, guiding instructional decisions, and enhancing learning outcomes, particularly in mathematics education. Unraveling the formative assessment strategies and practices of mathematics teachers will provide mathematics educators with sound judgment on the appropriateness of assessment strategies for teaching and learning. Hence, this study aimed to ascertain the formative assessment strategies, practices, and challenges encountered by secondary school mathematics teachers of Bauko District I, Mountain Province, for SY 2024-2025. Employing a descriptive-qualitative design, data was collected through Likert-scale survey questionnaires, document review, and narrative analysis to provide an understanding of the current formative assessment strategies and practices used by selected junior high school mathematics teachers in Bauko 1 District, Mountain Province. The findings indicated that JHS mathematics teachers in Bauko District I commonly employ formative assessment strategies that promote active participation and immediate feedback. However, reflective and self-assessment approaches are less frequently used. Overall, teachers demonstrated satisfactory competence in formative assessment practices, particularly in monitoring learning progress, clarifying objectives, providing feedback, and supporting peer evaluation. Nonetheless, the effective implementation of formative assessment was hindered by constraints such as limited resources, weak internet connectivity, insufficient time, and the complexity of mathematical concepts. Based on these findings, it is recommended that a contextualized lesson exemplar be adapted and implemented to guide JHS mathematics teachers in effectively integrating both commonly used and less frequently applied formative assessment strategies, thereby strengthening student engagement and improving mathematics teaching and learning.

Keywords: active participation, feedback, lesson exemplars, professional development

CONSTRUCTION OF THE NEW MAIN BUILDING OF NUEVA VIZCAYA PROVINCIAL HOSPITAL

Donbenson T. Sententa & Jefrie T. Alindayu

This technical paper presents the planning, implementation, and completion of the “construction of the new main building of Nueva Vizcaya Provincial Hospital,” a Level I government general hospital located in Bambang, Nueva Vizcaya, established to provide accessible, high-quality healthcare services within the province. Due to increasing patient demand and high bed occupancy rates exceeding the prescribed standard, the Provincial Government of Nueva Vizcaya initiated the construction of a new hospital facility to expand the hospital’s capacity by an additional 188 beds and improve healthcare service delivery in Nueva Vizcaya and nearby areas. The project was implemented by the PLGU of Nueva Vizcaya under the supervision of the Provincial Engineering Office through three phases, with a total approved project cost of Php 228,145,539.41 sourced from the 2018 and 2019 20% Development Fund and a loan from the Land Bank of the Philippines. The scope of work included the construction of a four-story hospital building with complete structural, architectural, mechanical, electrical, and plumbing systems, including an accessible reinforced concrete service ramp and connecting bridge to support hospital circulation and operations. The project was implemented through government procurement and competitive bidding procedures under Republic Act No. 9184. It was awarded to the winning contractor, Dennise-John Construction and Supplies. Construction was substantially completed within 1,732 calendar days and completed in 2025. The study emphasizes the importance of effective project planning, coordination, procurement, and construction management, and recommends strengthening site investigation, hospital planning, permit acquisition, safety implementation, and stakeholder coordination to improve the effectiveness and sustainability of future healthcare infrastructure projects.

Keywords: connecting bridge, construction project, healthcare facility planning, hospital infrastructure development, implementation

PALABOTAN – BANILA – CAINO – ANAYO – CANAREM ROAD IMPROVEMENT PROJECT

Lady Ellen Gene B. Gabrillo & Jefrie T. Alindayu

The “upgrading of Palabotan – Banila – Caino – Anayo – Canarem Road” project was implemented to improve rural accessibility and provide a durable, all-weather road that ensures safe, efficient, and reliable transportation. The project aimed to enhance the movement of agricultural products, reduce travel time and vehicle operating costs, and improve access to essential services such as markets, schools, and healthcare facilities. It was undertaken by the Provincial Local Government Unit (PLGU) of Nueva Vizcaya, with technical assistance from the Provincial Engineering Office (PEO), and completed in four phases with a total project cost of PHP 330,700,000.00. The project covered approximately 21.0 kilometers of roadway with a 15.0-meter right-of-way and a 17,170.00-meter section requiring upgrading. The pavement structure consisted of Plain Portland Cement Concrete Pavement over a 200 mm aggregate base course. Funding was sourced from a Land Bank of the Philippines loan for Phase I and the 20% Development Fund for Phases II to IV.

During implementation, progress was systematically monitored through accomplishment reports and periodic site inspections. At the same time, payments were made through progress billings based on verified accomplishments. Moreover, variation orders were issued to address actual site conditions to ensure safety, durability, and successful completion. As summarized in the project records, Phase I recorded positive contract adjustments of 6.23%, Phase II and Phase III showed minor negative adjustments of -1.057% and up to -0.003%, and Phase IV reflected adjustment of 0.0002%. All phases were implemented within their respective contract durations, with Phase I completed ahead of its revised schedule. Overall, the project significantly improves regional connectivity and supports socio-economic development in the area by enhancing transport efficiency, safety, and access to essential services.

Keywords: agriculture, contract, farm to market road, transportation

SoGS-SR-24

WEB-BASED FINANCIAL REPORTING SYSTEM FOR FIRST NOVO VIZCAYANO TRAVELLERS TRANSPORT COOPERATIVE (FNVTTTC)

Charlene B. dela Cruz & Gertrude G. Danao

This study developed a web-based financial reporting management system for the First Novo Vizcayano Transport Traveller Cooperative (FNVTTTC) to improve its manual financial processes. FNVTTTC previously recorded cash flow, income statements, and driver remuneration using Google Sheets and whiteboards, resulting in errors, inefficiencies, and delays. The system automates cash flow tracking, income statement generation, and driver payment calculations, ensuring accurate and real-time financial monitoring. By centralizing financial data and improving report generation, it enhanced accessibility, reduced manual workload, and supported better decision-making. The development followed the Rapid Application Development (RAD) methodology, consisting of four phases: requirements planning, user design, construction, and cutover. Interviews with FNVTTTC personnel were conducted to identify existing challenges and determine system requirements. The system was developed using HTML, Bootstrap, JavaScript, and native PHP. To ensure software quality, the system was evaluated using the ISO/IEC 25010 quality model. The evaluation yielded the following average scores: functional suitability (4.61), performance efficiency (4.50), compatibility (4.67), usability (4.53), reliability (4.29), security (4.60), maintainability (4.50), and portability (4.56), resulting in an overall mean score of 4.53. These results indicate that the system met quality standards and effectively addressed the cooperative's financial management needs, offering a more efficient, reliable, and organized approach to financial reporting.

Keywords: cooperative management, financial reporting management system, financial report generation, transport cooperative, web-based system,

A CLINICAL DECISION SUPPORT SYSTEM FOR EARLY DETECTION AND INTERVENTION IN CHRONIC KIDNEY DISEASE: DESIGN AND IMPLEMENTATION

Mark Julius G. Bucad & Getrude G. Danao

This study developed and evaluated a clinical decision support system designed to enhance early detection and intervention for chronic kidney disease (CKD) by integrating essential clinical data, machine-learning-assisted risk assessment, and guideline-aligned recommendations into a streamlined digital workflow. Guided by the lean software development methodology, the system was iteratively designed as a minimum viable product to address real-world clinical inefficiencies identified through interviews with the research respondents and workflow observations involving clinicians and health information system administrators. Using a descriptive and developmental research approach, the researcher employed structured interviews, dataset analysis, and a prototype system evaluation aligned with ISO 81001-1:2021 and ISO/IEC 25002:2024 software quality standards, focusing on functionality, suitability, usability, and reliability. Machine-learning models, including random forest, logistic regression, and k-nearest neighbors, were implemented to support CKD risk stratification and early identification based on laboratory and clinical indicators, particularly automated eGFR computation. Findings revealed that early CKD detection is hindered by fragmented health records, delayed laboratory follow-up, and inconsistent interpretation of clinical indicators, yet clinicians expressed strong support for a tool that centralizes patient information and automates eGFR computation and risk stratification. The CDSS achieved high ratings across key ISO quality attributes, with an overall weighted mean score of 4.78, demonstrating its potential to improve clinical decision-making, reduce manual errors, and support timely referral and monitoring. The study concludes that a lean-designed, standards-compliant CDSS augmented with machine-learning algorithms can significantly strengthen CKD early-intervention workflows and be effectively integrated into existing health information systems, with future work focusing on larger datasets, enhanced interoperability, and long-term outcome evaluation.

Keywords: clinical workflow, decision support system, early detection, kidney function, machine learning algorithm

ASSESSING THE ORAL LANGUAGE PROFICIENCY OF PRE-SERVICE TEACHERS AND ITS CORRELATES: A BASIS FOR ORAL ENHANCEMENT PROGRAM

Maria Cristina B. Javier & Zayda S. Asuncion

This study assessed the oral language proficiency of 17 English pre-service teachers from Ifugao State University and explored its correlation with gender, dominant language, learner background, and exposure. Employing a descriptive-correlational research design, the study gathered data through classroom observations guided by the Student Oral Language Observation Matrix (SOLOM), video recordings of the respondents' final demonstration teaching, and a structured survey. Results indicated that the overall oral language proficiency of the participants was at the advanced

level, with notable strengths in classroom instruction, comprehension, and non-verbal communication. Conversely, grammar and fluency emerged as areas needing improvement, both rated at the intermediate level. Statistical analyses showed no significant differences in oral proficiency based on gender, dominant language, or learner background. However, language exposure was found to have a significant impact and a direct relationship with oral proficiency at the individual level. These findings underscore the importance of authentic language use and varied exposure in enhancing speaking skills. In response, the ENGAGE Program (English Growth Activities for Genuine Expression) was developed to support oral language enhancement through targeted strategies such as media immersion, vocabulary building, public speaking, peer interaction, and reflective speaking activities. This study highlights the value of structured and meaningful exposure in developing communicative competence among future educators and provides a basis for designing relevant intervention programs in teacher education.

Keywords: advanced level, dominant language, intermediate level, language exposure, speaking proficiency

SoGS-SR-27

PHYSICAL INSTRUMENT FOR ASTHMATICS (PIA): A CUSTOMIZED FITNESS TEST FOR PATHFIT STUDENTS WITH ASTHMA

Alphine P. Seriosa & Mary Grace M. Bulatao

This study aimed to develop and evaluate a customized physical fitness assessment, known as the Physical Instrument for Asthmatics (PIA), for Physical Activities Towards Health and Fitness (PATHFIT) students diagnosed with asthma. Specifically, it determined pre-test and post-test performance and examined whether the intervention improved overall physical fitness. A pre-experimental one-group pre-test–post-test design was employed, involving PATHFIT 2 and PATHFIT 4 students during the second semester of the 2025–2026 Academic Year. Participants were selected based on a confirmed asthma diagnosis and medical clearance. The study used a modified physical fitness test comprising the six-minute walk test, wall sits, seated leg raises, 30-second walk test, vertical jump, and T-agility test. Results revealed that participants demonstrated improved performance across all fitness components following the intervention. Cardiovascular endurance increased, as evidenced by greater distances covered, while muscular strength and endurance reached higher performance classifications. Improvements were also observed in speed, power, and agility, although slight variability remained among participants. The findings suggest that structured, asthma-sensitive physical activity can enhance physical fitness without compromising safety. The study concludes that the PIA model is an effective and appropriate tool for assessing and improving students' physical fitness with asthma. It is recommended for use in inclusive physical education programs. It may also serve as a basis for future research and program development.

Keywords: asthma, customized physical fitness assessment, inclusive education, physical activity for health and fitness

**UTILIZATION OF MULTIPLE FITNESS APPS FOR
PERFORMANCE-BASED ASSESSMENT IN TEACHING PATHFIT
DURING FLEXIBLE LEARNING**

Makeda Pag-asa R. Young & Mary Grace M. Bulatao

The incorporation of technology in physical education has become an increasingly critical element in promoting active participation and lifelong fitness among learners. The current study evaluated the implementation of mobile fitness applications as a tool of performance-based evaluation in the context of Physical Activity Towards Health and Fitness 2 (PATHFIT 2) at Nueva Vizcaya State University. The research determined how the use of fitness applications can motivate students, keep them accountable, and encourage consistency in their exercise performance under flexible learning contexts. A convergent parallel mixed-methods design was employed to collect both quantitative and qualitative data. The quantitative data was derived from the outputs of the mobile applications, which measured distance, time, and frequency. The qualitative data was derived through reflective journals, teacher observations, and focus group discussions. Descriptive statistics were used to compare trends in performance, while thematic analysis was conducted to identify patterns that frequently occurred during the students' experiences. Results showed that despite initial difficulties with the technical aspects, the students demonstrated flexibility, increased interest, and a gradual acquisition of exercise workouts when using fitness applications. The integration of these tools under flexible learning conditions also allowed continuous monitoring of student performance even when activities were performed remotely, supporting equitable participation despite physical distance or environmental constraints. The findings indicated that performance monitoring, aided by technology, improved motivation and self-regulation and promoted the active use of the FITT principle. However, issues regarding the sensitivity of devices and data integrity were noted. In response to the identified issues, the MakeDRun mobile application was created to enhance the accuracy of tracking, facilitate reflective journaling, and ensure fairer evaluation, alongside the integration of technological tips. These results provide evidence of the opportunities offered by the implementation of fitness technologies in physical education to establish adaptable, inclusive, and result-oriented learning spaces. These innovations align with the international trend of digital transformation in the educational sector and support the role of technology in developing comprehensive health, well-being, and lifelong fitness habits among university students.

Keywords: fitness applications, flexible learning, PATHFIT 2 physical education, performance-based assessment,

BEYOND PLAY: ESSENTIAL SKILLS AND SOCIAL VALUES IN IFUGAO INDIGENOUS GAMES

Rachelle B. Diclihon & Mary Grace M. Bulatao

This study explored the cultural, physical, and social dimensions embedded in selected Ifugao indigenous games as meaningful learning resources beyond recreation. It employed a qualitative narrative design using focus group discussions and interviews among 16 MAPEH teachers, 17 Indigenous Peoples Education (IPEd) coordinators, and 12 Ifugao culture masters in Kiangnan, Ifugao. Findings revealed that *Batawil* (a wooden shoulder pole) relay, *Hukting-ngan* (rooster fight), *Bultung* (Ifugao indigenous wrestling), and *Hanggul* (arm wrestling) function as culturally structured activities governed by indigenous rules, symbols, and communal practices that reflect the Ifugao way of life. These games require the integration of multiple physical competencies—such as strength, balance, coordination, endurance, agility, and timing—demonstrating that skill development occurs holistically rather than in isolation. Likewise, the games demand not only physical ability but also strategic thinking, anticipation, and situational awareness, aligning them with broader physical education competencies. Furthermore, the games serve as dynamic spaces for socialization where values such as teamwork, trust, discipline, respect, perseverance, and cultural pride are practiced and internalized through participation. Finally, these indigenous games provide culturally responsive and engaging alternatives to conventional teaching methods, making learning more meaningful and contextually relevant. The study concludes that Ifugao indigenous games are viable pedagogical tools that support culturally responsive teaching and help preserve indigenous heritage within formal education systems. It is recommended that the pamphlet be reviewed and validated by authorities and that these games be integrated into curricula through collaboration with cultural bearers to ensure authenticity and sustainability.

Keywords: cultural preservation, experiential learning, indigenous knowledge systems, physical literacy, values formation

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Guest Panel	Flomilyn B. Dela Cruz, BSC, Senior Trade and Industry Development Specialist- Department of Trade & Industry Aira Leigh Suguitan-Rumbaua, - Faculty, NVSU, BS- Tourism, MSTM Ongoing

SAB-SR-01

FACTORS INFLUENCING INCENTIVE UTILIZATION UNDER REPUBLIC ACT NO. 9178 (THE BARANGAY MICRO BUSINESS ENTERPRISES ACT OF 2002) BY REGISTERED BUSINESSES IN BAYOMBONG, NUEVA VIZCAYA

Hazel G. Agapito, Jannell Batoon, Jessa Mie D. Lavarro, Krisssha Mae B. Soto, Eiffle M. Yaban, & Joel Ramon Gabriel R. Espino

The Barangay Micro Business Enterprises (BMBE) Act of 2002, or Republic Act No. 9178, was enacted to provide incentives and support to micro-businesses in the Philippines, with the aim of promoting their growth and development through various financial and regulatory benefits. This study examined the factors influencing the utilization of incentives under the BMBE Act among registered micro-businesses in Bayombong, Nueva Vizcaya. The researchers employed a descriptive-qualitative research design and gathered data through semi-structured interviews with a sample of ten BMBE-registered businesses across various industries. The research identified key psychological, societal, economic, and political-legal factors that impact the effective utilization of BMBE incentives. The findings revealed that while the program offers significant benefits, barriers such as bureaucratic inefficiencies, lack of awareness, and regulatory challenges hinder full utilization. The study recommends targeted policy interventions, increased information dissemination, and streamlined processes to enhance program effectiveness and participation. These insights contribute to a deeper understanding of micro-enterprise development in the region and offer valuable guidance for policymakers in optimizing support for small businesses.

Keywords: awareness, bureaucracy, information dissemination, policy clarity

SAB-SR-02

APPLICATION OF PAS 37 ON SUSTAINABLE PRACTICES OF MINING INDUSTRIES IN NUEVA VIZCAYA

Marvin Joshua D. Pamintuan, Kyle Juzlee P. Umali, Jaevren Brix Valdez, Nadiene L. Divad, Lindsey Joelle P. Dumalnoc, & John Lindy R. Soriano

This study examined the sustainable practices of mining industries in Nueva Vizcaya. It evaluated how these practices are measured under the Philippine Accounting Standard (PAS) 37: provisions, contingent liabilities, and contingent assets. Mining plays a key role in local economic development. Yet, its operations pose environmental and social concerns that require transparency, accountability, and alignment with sustainability reporting frameworks. Guided by the Triple Bottom Line framework, the research investigated sustainability in three areas—social responsibility, environmental sustainability, and economic sustainability, and analyzed how mining companies recognize and measure related sustainability obligations under PAS 37. A qualitative-descriptive approach was applied through semi-structured interviews with accountants and sustainability officers from two licensed mining firms, supported by document analysis of financial statements and sustainability-related disclosures. Descriptive content analysis revealed that both companies actively implement sustainability initiatives, including community development programs, livelihood assistance, reforestation, and environmental rehabilitation. However, these activities are not recognized as provisions or

contingent liabilities under PAS 37 because no present obligation exists that would result in a probable outflow and reliably measurable financial amount. Instead, sustainability initiatives are treated as operating expenses and recognized only when incurred rather than being recorded as future obligations, with recognition deferred until execution, emphasizing timing, enforceability, and legal form over mere probability. The study concludes that although sustainable practices are ongoing, their accounting recognition remains limited to expense treatment, demonstrating an implementation gap between sustainability efforts and formal liability measurement under PAS 37. Enhancing standard interpretation, regulatory guidance, and uniform reporting practices may improve consistency, transparency, and comparability across the mining sector.

Keywords: contingent liability, financial reporting, mining industry, Nueva Vizcaya, triple bottom line, sustainability

SAB-SR-03

SUSTAINABILITY PRACTICES OF THE HOTEL INDUSTRY IN CAGAYAN VALLEY USING IFRS S1 AND S2

*April Joyce Ann R. Mandac, Aldritz John B. Mendones, Izra Lyanne R. Palaruan,
& Francis Leo C. Tugab*

The study assessed the level of implementation of sustainability practices in the hotel industry in Cagayan Valley using IFRS S1 and S2. The research explored the sustainability initiatives implemented by hotels in four pillars: governance, strategy, risk management, and metrics and targets. In gathering primary data, a mixed-methods approach was used through a survey questionnaire and interviews with the owners and managers of DOT-accredited hotels, with the data analyzed using descriptive statistics and thematic analysis. The findings underscored that hotels in Cagayan Valley implement standard-aligned sustainability practices at a moderate level across the four pillars. Particularly, hotels are at an early stage in establishing oversight roles for sustainability, integrating sustainability and climate-related matters into strategic planning and budgeting, managing ESG and climate-related risks, and implementing visible, cost-saving sustainability targets. However, areas of improvement are noted in capacity-building, data systems, and performance monitoring mechanisms. Additionally, the study revealed that the level of implementation of sustainability practices in hotels remains consistent across asset size, income level, location, and years of operation. Notably, it was found that cost implications, the lack of monitoring and reporting systems and expertise, balancing sustainability measures with customer comfort, and employee resistance are challenges that impede the hotels' sustainability progress and compliance with global standards. With the increasing trend towards sustainability and the gradual adoption of the standard in the local setting, alignment with IFRS S1 and S2 enhances compliance, operational efficiency, long-term resilience, and competitiveness in the hotel industry.

Keywords: climate-related disclosures, hospitality industry, International Sustainability Standards Board (ISSB), sustainability reporting, sustainability standards

SAB-SR-04

THE IMPLEMENTATION OF RISK MANAGEMENT STRATEGIES AND ITS IMPACT ON FINANCIAL PERFORMANCE: A CASE STUDY OF A FIELD-TO-FORK BAKERY

John Cyril V. Longui, Princess Diane L. Cadiz, Danica Jewel C. Lantion, Frances Keana A. Perez, & Maria Concepcion T. Jalijali

Risk management plays a crucial role in ensuring the long-term stability and growth of small and medium-sized enterprises (SMEs) within the food sector. This study identified the financial, operational, strategic, and supply chain risks encountered by a field-to-fork bakery in Bambang, Nueva Vizcaya, analyzed the strategies implemented to address these risks, and determined their effects on financial performance. A single-case study design employing a convergent parallel mixed-methods approach was used. Qualitative data were gathered using semi-structured interviews and on-site walkthrough observations, while quantitative data were derived from financial statement analysis covering the period from 2021 to 2024. Financial performance was assessed using return on assets (ROA), return on equity (ROE), and return on sales (ROS), where ROA measures asset utilization efficiency, ROE measures returns on owners' equity, and ROS measures profitability relative to sales. The findings revealed that the bakery faces challenges in delayed collections, workforce management, competitive market pressures, regulatory compliance requirements, and supply chain disruptions. To address these risks, the bakery implements various financial, operational, strategic, and supply chain risk management strategies. The results showed that while ROA and ROE declined during the expansion period due to increased investments in assets and equity, ROS consistently improved, indicating enhanced sales profitability. Overall, the implemented risk management strategies improved the bakery's operational resilience and sales profitability despite the challenges associated with expansion.

Keywords: business resilience, farm-to-fork, operational efficiency, profitability, risk management practices

SAB-SR-05

THE BALANCED SCORECARD IMPLEMENTATION AND THE FINANCIAL PERFORMANCE OF SELECTED HOTELS IN A DEVELOPING PROVINCE

Zyrl Jervis A. Maggay, Maricel G. Pinkihan, Froilan Dave M. Reyes, Sandara Faith G. Taganas, Charmaine Alyssa G. Tan, & Jeanette R. Mania

Performance measurement supports business in organizational planning, control, and management. The Balanced Scorecard (BSC), introduced by Norton and Kaplan, is one of the most widely used performance measurement tools using four perspectives: financial, customer, internal business processes, and learning and growth. Despite its recognized value, the field has yet to be thoroughly examined regarding its implementation in local and developing regions. This study assessed the extent of Balanced Scorecard (BSC) adoption among selected hotels and evaluated their financial performance using liquidity and profitability indicators. A quantitative descriptive research design was employed, with survey questionnaires administered to respondents identified through purposive sampling. The selected hotels in Nueva Vizcaya demonstrate a generally strong level of Balanced Scorecard implementation,

particularly in the financial, customer, and learning and growth perspectives. At the same time, internal business processes remain moderately implemented. Financially, the hotels exhibit high liquidity but only moderate profitability, indicating a need to strengthen internal processes and asset utilization to translate operational practices into sustainable financial performance. Recommendations were formulated for the local government units, policymakers, selected hotels, faculty members, students, and future researchers, both to inform practice and to serve as a reference for subsequent studies.

Keywords: assessment, liquidity performance measurement, perspectives, profitability

SAB-SR-06

DETERMINING THE EXTENT OF LIFE CYCLE COSTING APPLICATION OF AUTOMOTIVE REPAIR SERVICES IN NUEVA VIZCAYA AND ITS PERCEIVED RELATIONSHIP TO ASSET OPTIMIZATION

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The automotive industry is one of the fastest-growing sectors in the Philippines. Driven by the increasing ownership of vehicles in both urban and rural areas, competition in the automotive repair business advances in pace with technological changes. This study determined the extent of life cycle costing (LCC) application of 15 automotive repair services in Nueva Vizcaya and its perceived relationship to asset optimization. The researchers utilized a structured questionnaire to collect the necessary data and employed a descriptive-correlational analysis to interpret the results. The data was analyzed using the Mean, Standard Deviation, and Spearman's Rho. The results showed that among the four phases in life cycle costing, namely acquisition, operation, maintenance, and disposal, there is a moderate extent of application across each phase of LCC. Still, only the maintenance and disposal phases, when planning to acquire equipment, have a significant relationship to asset optimization. The level of asset optimization, on the other hand, was found to be highly optimized. This indicates that although maintenance and disposal costs can influence the efficiency and effectiveness of the equipment, automotive repair owners/managers can already maximize their equipment performance without applying LCC to its full extent. Additionally, correlation analysis revealed no statistically significant relationship between LCC application and asset optimization. However, a generally positive trend was observed. This implies a possible connection between the two, which future researchers can further validate by having a larger sample size.

Keywords: acquisition phase, cost management, disposal phase, maintenance phase, maximization, operation phase, performance perspective

FACTORS AFFECTING THE PROFITABILITY OF RICE FARMERS IN SAN MATEO, ISABELA

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Rice remains a vital agricultural commodity worldwide, serving as a primary food source and contributing significantly to the Philippine economy. However, the rice farming industry experiences a downturn in production and profitability due to various challenges. This study determined the factors affecting the profitability of rice farmers in San Mateo, Isabela, by identifying which factors significantly influence their profits and the relationship between these factors and the farmers' profits. The researchers employed a descriptive research design with a mixed-methods approach, using face-to-face interviews and structured questionnaires to collect data from 60 rice farmers across three selected barangays. Data was analyzed using statistical tools such as Mean, Standard Deviation, and Spearman's Rho. At the same time, financial performance was measured using ROI and Net Profit Margin. Results revealed that among the four factors examined, farmers generally agreed that farming costs, changes in weather conditions, and labor availability significantly affect profitability. However, the availability of technical assistance was perceived to have a minimal impact, indicating disagreement among the respondents, suggesting that such technical assistance is not fully optimized or effectively implemented. Additionally, the assessment of the farmers' financial performance revealed that while some farmers achieved favorable gains, others incurred losses due to farming practices, production technologies, input costs, and market conditions. Further analysis also revealed that none of the factors have statistically significant correlations with profitability. Furthermore, farmers identified additional challenges they faced in rice farming, which they perceived as significantly affecting their profitability.

Keywords: changes in weather conditions, farming costs, financial performance, labor availability

COMPETITIVE ADVANTAGE OF BUKO INDUSTRY PLAYERS IN NUEVA VIZCAYA USING PORTER'S FIVE FORCES MODEL

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Micro, small, and medium-sized enterprises (MSMEs) significantly contribute to local economic growth in Nueva Vizcaya where *buko* pie has become a well-known product. This study examined the competitive advantage of *buko* pie industry players in Bagabag, Nueva Vizcaya using Porter's Five Forces Model. It analyzed the threat of substitutes, new entrants, bargaining power of buyers and suppliers, industry rivalry, and the challenges faced in staying competitive. A qualitative-descriptive approach was used through face-to-face interviews with six (6) purposively selected owners and managers of registered *buko* pie enterprises. Thematic analysis was applied to interpret the results. Findings showed that although many other local delicacies exist, the threat of substitutes is moderate because customers remain loyal to *buko* pie and

buko pie industry players continue to improve their products. The threat of new entrants is still present due to low start-up requirements, but established stores benefit from customer trust and strategic location along Bagabag's "Buko Pie Alley." Supplier power is moderate due to changing coconut prices and the need for consistent raw materials. Buyers have high bargaining power because they are price-sensitive and have many choices, pushing businesses to maintain good quality. Competition among existing players is strong because stores operate in close proximity and sell similar products, encouraging continuous innovation. The study concludes that competitive advantage depends on product improvement, innovation, good supplier relationships, and meeting buyer preferences. The researchers recommend strengthening marketing efforts, improving product quality, and maximizing government support. It is further recommended that future researchers use quantitative methods to provide more in-depth analysis.

Keywords: buko pie, competitiveness, local food industry, msme, price sensitivity

SAB-SR-09

IMPLICATIONS OF ENVIRONMENTAL SUSTAINABILITY PRACTICES ON FINANCIAL PERFORMANCE: A CASE OF A HOTEL IN ISABELA

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Hotels play a vital role in economic development through tourism, employment, and revenue generation. Still, its operations also contribute significantly to environmental degradation due to high consumption of waste, water, and energy. This study determined the implications of environmental sustainability practices on a hotel's financial performance in Isabela. The proponents employed a mixed-method approach using descriptive and case study designs. Data was gathered through structured questionnaires, interviews, and financial statement analysis involving purposively selected hotel stakeholders. The data was analyzed using the following statistical tools: Mean, Standard Deviation, financial profitability ratios (net profit margin, return on assets, and return on equity), and thematic analysis. Findings revealed that the hotel moderately implements environmental sustainability practices in waste management, water consumption, and energy consumption, while maintaining profitability across the study period, as reflected in its NPM, ROA, and ROE. Revenue peaked in 2022 during the post-pandemic recovery but declined in later years due to rising costs and sustainability investments. ROA and ROE showed moderate efficiency and stable returns, as management balanced profitability with gradual eco-friendly initiatives. Despite the hotel's challenges, integrating environmental sustainability practices demonstrated potential long-term financial and environmental benefits. For more in-depth findings, the researchers recommend that hotels continue strengthening the implementation of environmental sustainability practices and that future researchers incorporate additional financial measures, such as liquidity and solvency ratios, to obtain a more comprehensive evaluation of financial performance.

Keywords: energy conservation, financial ratios, hospitality management, waste management, water conservation,

**A SWOT ANALYSIS ON THE INTEGRATION OF CASHLESS
TRANSACTIONS ON THE COMMERCIAL OPERATIONS OF MSMEs IN
BAYOMBONG, BAMBANG AND SOLANO, NUEVA VIZCAYA**

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The growing adoption of cashless systems in technologically advanced societies has compelled businesses worldwide to adopt digital payments for survival and competitiveness. This study focused on the digitalization of the business world. This qualitative-descriptive study examined the strengths, weaknesses, opportunities, and threats (SWOT) of integrating digital payments in micro, small, and medium enterprises (MSMEs), with a focus on small businesses in the Philippines. Data was collected through interviews with MSME owners in Solano, Bambang, and Bayombong. Key findings highlighted strengths such as enhanced operational efficiency and accuracy, improved customer convenience, increased customer satisfaction, strengthened security through traceable transactions, and greater competitiveness. Among the weaknesses cited were unreliable internet connectivity, while opportunities encompassed business expansion and modernization driven by consumer preferences for digital methods. Threats involved scams and cybersecurity vulnerabilities. Although responses largely aligned across locations, contradictions emerged regarding fraud reduction versus heightened vulnerability, underscoring the influence of contextual factors. These insights underscore the transformative potential of cashless adoption for MSMEs, while emphasizing the need for infrastructure improvements and further research to address disparities and ensure equitable benefits. Recommendations include BSP-led initiatives to bolster digital literacy and resilience, fostering sustainable fintech integration.

Keywords: cashless systems, digitalization, digital payment, financial inclusion, financial technology, internet connectivity, noncash transactions

**ASSESSING THE FINANCIAL VIABILITY OF VARIOUS TILAPIA
FARMING METHODS IN NUEVA VIZCAYA: IMPLICATIONS FOR
FARMERS' PROFITABILITY**

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Tilapia farming is a vital component of the aquaculture industry due to the fish's adaptability, affordability, and high-quality protein content. Its ease of cultivation and low entry barriers make it appealing to many farmers. However, most studies focus on production aspects, such as growth rate and yield, without addressing profitability and long-term business viability. This study assessed the impact of different tilapia farming methods on the financial performance of farmers in Nueva Vizcaya. Using comparative and correlational research designs with simple random sampling, data were collected from 116 tilapia farmers across five municipalities of Bayombong, Quezon, Solano, Kasibu, and Villaverde. Information was collected through validated questionnaires and semi-structured interviews focusing on production practices, financial performance, and industry challenges. Profitability

was evaluated using net profit margin (NPM), return on assets (ROA), and return on equity (ROE). The Chi-square test examined the relationship between farming methods and profitability. Results showed that farmers in Nueva Vizcaya practice only intensive and semi-intensive farming, as extensive farming was financially unviable because of low yields and limited marketability. Intensive farming had the highest profitability across all ratios, while semi-intensive farming was moderately profitable. Although the statistical relationship between farming methods and profitability was insignificant, profitability was influenced by effective management and financial capacity. The study recommends enhancing farmers' technical and management skills and providing financial and technical support from government agencies, LGUs, and NGOs to strengthen tilapia aquaculture sustainability.

Keywords: adaptability, efficiency production, profitability, viable, feasible

SAB-SR-12

CORPORATE SOCIAL RESPONSIBILITY INITIATIVES AND FINANCIAL PERFORMANCE OF AGRI-SUPPLY BUSINESSES IN NORTHERN PHILIPPINES

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Corporate Social Responsibility (CSR) has become an integral aspect of business operations, guiding firms in addressing societal needs while maintaining responsible management practices. In the agri-supply business sector, CSR is associated with supporting farmers, promoting ethical conduct, and contributing to overall business sustainability. This study examined the CSR initiatives and financial performance of agri-supply businesses in Santiago City, Isabela, focusing on economic, legal, ethical, and philanthropic responsibilities. A mixed-method approach was employed, with data gathered through face-to-face survey questionnaires administered to 18 registered agri-supply businesses. The results indicated that most businesses operate on a small scale, offering products such as animal feeds, fertilizers, pesticides, rice, and corn, while managing limited capital and manpower. CSR initiatives were observed across the four responsibility dimensions, particularly in relation to compliance with laws, ethical business conduct, employee welfare, and community involvement. In terms of financial performance, indicators related to profitability, liquidity, leverage, and sales suggest that businesses are generally able to sustain daily operations and meet short-term obligations, although variations in income levels and competitive pressures were noted. The study also identified several challenges of implementing CSR, including market competition, stakeholder behavior, financial limitations, government policy concerns, logistical constraints, and issues within the agricultural system. The findings provide a basis for understanding how CSR initiatives and financial conditions interact within agri-supply businesses, offering considerations for improving responsible operations and financial management.

Keywords: challenges of implementing CSR initiatives, economic responsibility, ethical responsibility, legal responsibility, leverage, liquidity, philanthropic responsibility, profitability, sales

**ORGANIZATIONAL CULTURE AND FINANCIAL PERFORMANCE OF
SELECTED PARISH MULTI-PURPOSE COOPERATIVES IN
NUEVA VIZCAYA**

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This study assessed the organizational culture and financial performance of selected parish multi-purpose cooperatives in Nueva Vizcaya. A mixed-method approach was used, combining quantitative and qualitative research methods. The quantitative method applied a descriptive-comparative design to identify differences in organizational culture among cooperatives during the second semester of AY 2025–2026. Organizational culture was measured using the Denison model, focusing on involvement, consistency, adaptability, and mission. Financial performance, including revenue growth, return on investment (ROI), profit margin, return on assets (ROA), and return on equity (ROE), were described using data from financial records. The qualitative method used thematic analysis to examine the experiences and insights of selected managers and employees, thereby identifying key themes and organizational practices. Findings revealed that the cooperatives generally demonstrated a strong organizational culture, particularly in terms of involvement and mission. At the same time, gaps were observed in consistency and adaptability. Differences in financial performance were also noted in that larger cooperatives showed stability, while smaller ones demonstrated growth potential. The study recommends improving communication systems, strengthening adaptability strategies, and enhancing financial management practices to support sustainability and organizational growth.

Keywords: adaptability, cooperative *management*, financial performance, organizational culture, sustainability

**GLOBAL MANAGEMENT ACCOUNTING PRINCIPLES (GMAP) AS A
GUIDE FOR HIGHER EDUCATION INSTITUTIONS (HEIs)**

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This study evaluated the application of Global Management Accounting Principles (GMAP) as a strategic framework for Higher Education Institutions (HEIs) in Nueva Vizcaya, Philippines. To address systemic funding and operational challenges, the research employed a mixed-methods design involving 13 financial leaders from five HEIs. Quantitative and qualitative analyses assessed eight GMAP practice areas. Findings reveal a "Highly Guided" level of implementation, particularly in Treasury and Cash Management (mean=3.57), while Risk Management (mean=3.40) showed developmental gaps. No significant differences in implementation were found based on institutional type or age. While barriers such as resource constraints and staff unfamiliarity exist, GMAP provides significant opportunities for transparency and value-based decision-making. The study concludes that GMAP is a transformative tool for institutional sustainability. Achieving its full potential requires continuous training, digital transformation, and robust governance to ensure HEIs remain competitive and aligned with global educational objectives.

Keywords: educational quality improvement, financial decision-making, financial sustainability, organizational sustainability enhancement, practice areas of management accounting

SAB-SR-15

ENVIRONMENTAL SUSTAINABILITY PRACTICES IN SHAPING CONSUMER BEHAVIOR OF STUDENTS IN HIGHER EDUCATIONAL INSTITUTION (HEI)

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Environmental sustainability has become a vital factor influencing modern consumer behavior, particularly among students in higher education. This study explored environmental sustainability practices and consumer behavior among students at higher education institutions in Nueva Vizcaya. It focused on students' knowledge of sustainability practices, including their understanding of sustainability concepts, familiarity with eco-friendly initiatives, and attitudes toward sustainable consumption, and how these relate to their willingness to purchase sustainable products and adopt green consumption habits. Using a quantitative approach, the study assessed the relationship between sustainability knowledge, attitudes, and consumer behavior. Findings showed that students demonstrated a high level of awareness of environmental sustainability and exhibited positive behaviors toward sustainable consumption. Moreover, significant relationships were found between sustainability knowledge and consumer behavior, as well as between students' attitudes toward sustainability and their consumer behavior, indicating that both awareness and positive attitudes contribute to more environmentally responsible purchasing decisions. This study contributes to research on sustainability in educational contexts by providing empirical evidence on how knowledge and attitudes toward environmental issues shape university students' consumption choices. The results highlight the importance of integrating sustainability-oriented education and institutional initiatives to cultivate environmentally responsible consumer habits and support long-term sustainable development. These findings emphasize the role of higher education institutions in fostering sustainability awareness through curriculum integration, campus programs, and policy support. Strengthening these efforts can further enhance students' engagement in sustainable practices and reinforce the development of values aligned with environmental responsibility in both personal and future professional contexts for long-term gains.

Keywords: eco-friendly initiatives, green consumption habits, purchasing decisions, sustainability knowledge, university

SAB-SR-16

ASSESSING THE DIGITAL LITERACY IN E-FILING OF TAX RETURNS IN A DEVELOPING PROVINCE

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The global shift toward digital tax administration is geared towards improving compliance and efficiency; however, its effectiveness depends largely on taxpayers' digital literacy. This study examined the level of digital literacy among agribusiness owners and bookkeepers using the Bureau of Internal Revenue (BIR) e-filing system

in Nueva Vizcaya. A quantitative descriptive-comparative design was utilized. Respondents were selected purposively from registered agribusinesses in the municipalities of Bambang, Aritao, and Bagabag. Data was collected through a structured questionnaire adapted from a validated instrument that measured respondents' demographic profiles, knowledge levels, and digital literacy in e-filing. Descriptive statistics, including mean, frequency, percentage, and standard deviation, were used to determine the level of digital literacy, while the Kruskal-Wallis test and Mann-Whitney U test assessed differences by age, educational attainment, and duration of e-filing system use. Findings indicated that respondents possess a moderate level of digital literacy in using the BIR e-filing system. Although most participants are aware of tax compliance requirements and penalties, many struggle to complete the filing process effectively. No significant differences in digital literacy were found across age and educational attainment; however, literacy levels improved with longer system usage. The study concludes that experiential learning improves competence in e-filing. Nonetheless, limited access to training and geographic barriers highlight the need for user-centered system improvements and expanded digital literacy support to strengthen tax compliance among rural agribusiness taxpayers.

Keywords: agribusiness, digital divide, tax compliance, tax penalties, technical proficiency

SAB-SR-17

DETERMINING LOCAL TAX STRATEGIES OF FIRST-CLASS MUNICIPALITIES

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Efficient and effective collection of real property taxes (RPT), permits, and licenses is essential to strengthening a municipality's financial capacity and is a critical factor in achieving and maintaining first-class municipality status. Accordingly, this study identified the strategies and challenges faced by first-class municipalities in Nueva Vizcaya in the collection of RPT, permits, and licenses. Using a qualitative method, the study gathered in-depth data through a guided interview with participants, who were randomly selected municipal treasurers, local assessors, revenue collection clerks, and business permits and licensing officers. Twelve (12) participants provided insights into their respective municipalities' tax collection. Moreover, data was analyzed using thematic analysis to identify key themes and patterns related to tax collection strategies and challenges. Findings revealed the varied strategies implemented by the first-class municipalities. For the collection of RPT, strategies included disseminating tax information, specific incentives and penalties, and, lastly, systematic monitoring and coordinated governance of municipalities. As for the collection of business permits and licenses, the municipalities are transitioning to a fully digital business permit process, using a system and physical inspection to monitor constituent compliance. It was also revealed that the main challenges faced by municipalities include operational constraints, financial capacity constraints, lack of taxpayer awareness, partial implementation of the digital system, and tracing of unregistered businesses.

Keywords: business permits and licenses, local governance, tax compliance, tax collection challenges, real property tax

**EXPLORING THE FINANCIAL BEHAVIORS AND CHALLENGES OF
LOW-INCOME SELF-EMPLOYED RETIREES TOWARDS CRAFTING A
CONTEXTUALIZED RETIREMENT PLAN**

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This study examined the financial behaviors and challenges of low-income self-employed retirees in the fifth-class municipalities of Villaverde and Ambaguio, Nueva Vizcaya, Philippines, to develop a contextualized retirement plan suited to their needs. Employing a mixed-methods approach, quantitative data from structured surveys were combined with qualitative insights from open-ended interviews involving 30 purposively selected respondents. Results indicated that while retirees value the importance of saving, actual practices are only moderately consistent due to irregular income, limited financial literacy, and restricted access to formal financial institutions. Spending patterns focus heavily on basic needs—particularly food and healthcare—while emergency saving and budgeting are hampered by seasonal earnings and economic vulnerability. Common challenges include unexpected health-related expenses, unstable agricultural income, ongoing educational support for dependents, and occasional debt reliance. Coping strategies range from engaging in alternative livelihoods and joining cooperatives to adjusting consumption and relying on family assistance. Findings informed the creation of a tailored financial retirement plan emphasizing flexible savings mechanisms, cooperative-led micro-investment options, accessible financial education, and community-based social protection measures.

Keywords: elderly, low-income, retirement plan, saving, self-employed, spending

**ASSESSING THE COMPETENCIES OF BACHELOR OF SCIENCE IN
OFFICE ADMINISTRATION GRADUATES IN A WORKPLACE SETTING**

Shaine Myka B. Balgos, Liela Mae V. Duntugan, Rizza C. Garcia, & Rodora P. Tipay

This study assessed the competencies of Bachelor of Science in Office Administration (BSOA) graduates from Saint Mary's University, guided by the provisions of CMO 19 series of 2017. The researchers employed a design integrating quantitative and qualitative approaches. The quantitative phase utilized a descriptive survey method with a questionnaire adapted from the CMO 19 series of 2017 to measure graduates' competencies. The qualitative phase incorporated an open-ended questionnaire to gather graduates' perceptions and recommendations for enhancing these competencies. A total of 68 BSOA graduates from academic years 2018 to 2024 participated in the study. Researchers determined the level of competencies, namely, common to all programs in all types of schools, competencies common to the Business and Management discipline, competencies specific to the Office Administration Program, and sample performance indicators. Results indicated that competencies common to all programs in all types of schools, competencies common to the business and management discipline, and competencies specific to the office administration program indicated a very high level of competency among the graduates in foundational, specialized, and discipline-specific skills. These suggest that the graduates possess a well-rounded set of competencies combining both core

and specialized knowledge. While sample performance indicators denoted a high level of competency, it was comparatively lower than the other categories. This slight decrease indicated a minor gap between theoretical knowledge and its practical application in real workplace scenarios. The drop in mean scores from curriculum-based competencies to performance-based indicators suggest that while graduates are well-prepared in theory, there is room for improvement in the translation of knowledge into effective job performance.

Keywords: level of competencies, knowledge, skills, workplace readiness

SAB-SR-20

CASSAVA PANDESAL: AN INNOVATIVE APPROACH TO ENHANCING BREAD PRODUCTS

Janeya Kate A. Martinez, Ma. Angelica P. Ahura, Mariane L. Ferrer, Asley Christine C. Laitan, Cyrell T. Sicat, Carmela L. Vilorio, & Marissa Lyn A. Labangcoc

This study determined the level of acceptability of cassava pandesal using three different proportions of cassava flour—12.5%, 25%, and 50%—as a partial substitute for wheat flour in bread production. A quantitative-descriptive and experimental research design was utilized, with product development conducted at the HTM Laboratory of Saint Mary's University and sensory evaluation carried out in two established bakeries in Nueva Vizcaya: Yummy's Bakeshop in Solano and Red Aguila's Bakery in Bayombong. Six bakers, selected through purposive sampling based on their baking experience, evaluated the three pandesal variants using a structured questionnaire and a sensory evaluation to assess appearance, aroma, taste, texture, and overall general acceptability. The pandesal with 12.5% cassava flour obtained the highest ratings, being "very much acceptable" in appearance, aroma, and texture, and "acceptable" in taste, indicating similarity to regular pandesal while offering a mild cassava profile. The 25% cassava variant was generally "acceptable" in all sensory attributes but received lower scores in smoothness of texture and flavor balance. The 50% cassava variant was the least preferred, with appearance rated only "acceptable" and taste and texture mostly "unacceptable" due to a harder, denser texture and a stronger, less familiar flavor. These results address the study's objectives by showing that cassava flour can be incorporated successfully at lower proportions without compromising sensory quality, but higher substitution levels significantly reduce acceptability. The findings also highlight the potential of using cassava as a local, affordable, and gluten-free ingredient to reduce reliance on imported wheat flour, support cassava farmers, and contribute to bread product diversification. The study recommends refining the formulation for better taste and texture, conducting further sensory tests with a larger consumer base, and encouraging bakeries to adopt cassava pandesal as a healthy, innovative, and locally sourced bread alternative that aligns with sustainable food production practices.

Keywords: acceptability, bread innovation, local ingredients, product development, sustainable food production

SAB-SR-21

**CHASING THE RAINBOW: STUDYING SAFE SPACE FOR LGBTQIA++
TOURISTS OF HOTELS IN NUEVA VIZCAYA**

Aaron Ray F. Bautista, Nyko Karl G. Bolla, Princess B. Cabanag, Xzkyl L. Dela Cruz, Jenna Belle C. Fernando, Samantha Cyrah A. Seraspi, & John Michael C. Ibarra

Chasing the Rainbow: Studying Safe Space for LGBTQIA++ Tourists in Hotels in Nueva Vizcaya explored the level of readiness of hotel establishments in providing safe and inclusive spaces for LGBTQIA++ tourist guests. Despite the growing recognition of LGBTQIA++ rights and the enactment of the Safe Spaces Act in the Philippines, discrimination and limited inclusivity persist within the hospitality industry. This research assessed hotel employees' awareness, training, and the availability of facilities and amenities that cater to LGBTQIA++ guests. Using a qualitative-descriptive research design, the study employed a semi-structured interview guide with 30 hotel employees from two Department of Trade and Industry (DTI)- and Department of Tourism (DOT)-accredited hotels in Bayombong, Nueva Vizcaya. The findings revealed that while many hotel employees are generally familiar and comfortable with LGBTQIA++ individuals, there are notable gaps in formal training, policy implementation, and inclusive amenities. The participants expressed a willingness to learn and recommended improvements such as gender-neutral facilities, comprehensive LGBTQIA++ sensitivity training, and the development of non-discriminatory policies. The study emphasizes the need for structured inclusivity programs to ensure that hotels can genuinely provide safe, welcoming, and respectful spaces for all tourists. These findings contribute to advancing gender equality, aligning with Sustainable Development Goal (SDG) 5, which advocates for the creation of inclusive and safe spaces for all individuals, regardless of gender identity or sexual orientation.

Keywords: gender equality, hotel readiness, inclusivity, LGBTQIA++, safe spaces

SAB-SR-22

**ASSESSING THE JOB READINESS OF THE GRADUATES OF
HOSPITALITY AND TOURISM MANAGEMENT
AT SAINT MARY'S UNIVERSITY**

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This study assessed the job readiness of graduates in Hospitality and Tourism Management from Saint Mary's University. A quantitative-descriptive correlational research design was used through a survey questionnaire based on CMO 62 2017. Specifically, it revealed the profile of graduates in terms of degree, employment status, and occupation, as well as the job readiness of 2022-2024 graduates based on competencies in housekeeping, food and beverage, front office, tour and travel, and tour guiding. Furthermore, challenges faced by graduates during their first employment, as well as their recommendations for the practicum program and curriculum, were also studied. Data was collected from 30 graduates (19 in Tourism Management and 11 in Hospitality Management) and analyzed using descriptive statistics. The findings revealed that 86.67% of graduates were employed, with 60%

in the hospitality and tourism sector. Results showed that the graduates reported being moderately ready in front office and housekeeping competencies, while they demonstrated partial readiness in tour guiding and tour and travel. The most significant challenges encountered were adjusting to the work environment and a lack of hands-on training. While the current curriculum and practicum training successfully lead to favorable job placements, the study found a need to improve graduates' job readiness. Therefore, it is recommended that academic programs enhance class and course activities to be more practical and skills based. This includes strengthening training in specialized tour operations and making practicum placements more targeted to industry needs.

Keywords: career selection, competencies, curriculum development, employability, practicum experiences

SAB-SR-23

TRANSFORMING TRAVEL AND TOURISM: UNLOCKING THE POTENTIAL OF CONTACTLESS PAYMENTS IN NUEVA VIZCAYA

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This study assessed the potential of contactless payment systems in transforming the travel and tourism sector in Nueva Vizcaya. Using a qualitative research design, data was gathered through interviews with 50 respondents, including tourists, locals, and tourism establishment managers. The findings revealed that contactless payments offer significant benefits such as faster transactions, improved efficiency, convenience, reduced physical contact, and enhanced travel experience. However, challenges such as lack of familiarity, technical issues, internet connectivity problems, and customer preference for cash remain evident. The study found that while challenges affect initial adoption, they tend to diminish over time as users become more familiar with the system. Overall, the results indicate that contactless payments have strong potential to improve tourism services and contribute to economic growth in Nueva Vizcaya. The study recommends strengthening digital infrastructure, promoting awareness, and encouraging wider adoption among tourism stakeholders.

Keywords: contactless payment, digital payment, smart tourism, tourism development

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Research Coordinator: Engr. Gerene-Leigh C. Almazan

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Guest Panel	Jerry R. Gamiao, Reg. ECE (Specialization: Biomedical Engineering) Moises Viernes, MD (Specialization: Medicine)

**THE FORUM: A PROPOSED NUEVA VIZCAYA TEACHERS' CAMP
CONVENTION AND TRAINING CENTER**

Given A. Loyola & Christopher R. Dominguez

Teachers' continuous professional development plays a vital role in improving the quality of education in the Philippines. While national policies support teacher training and development, there is still a lack of facilities that can effectively accommodate both large-scale academic events and regular training activities, especially in rural and remote areas. In Nueva Vizcaya, the lack of a centralized, well-designed convention and training facility limits opportunities for educators to collaborate, learn, and grow professionally. This study proposes the architectural design of a convention and training center for the Nueva Vizcaya Teacher's Camp located in Villa Coloma, Bagabag, Nueva Vizcaya. The project aims to provide a multi-functional facility that combines spaces for conventions, training, and support services within a single development. The design is guided by human-centered principles, focusing on comfort, accessibility, and the user experience. It also considers sensory design elements such as lighting, acoustics, and material selection to create a more effective and engaging learning environment. In addition, the study explores the use of contemporary brutalist architecture to achieve a strong and functional design identity. The research followed an applied design approach, using site analysis, case studies, and expert consultation to develop an appropriate planning and design framework. The proposed facility is intended to support various activities, including seminars, workshops, conferences, and other institutional events. It also aims to improve access to training facilities by providing a regional venue that complements existing national centers. The study presents a design solution that responds to the current lack of training and convention spaces for educators. It contributes to the development of educational infrastructure by promoting accessible, functional, and well-designed environments that support professional development and collaboration.

Keywords: contemporary brutalism, convention and training center, flexible spaces, human-centered design, sensory design, teacher professional development

**SALINLAHI: RESTORATION AND CONSERVATION OF SAINT
CATHERINE OF SIENA PARISH CHURCH – SAFEGUARDING AN
IMPORTANT CULTURAL PROPERTY OF THE PHILIPPINES**

Mark Dave M. Miranda & Vincent T. Degamo

This thesis proposes a comprehensive conservation and restoration framework for Saint Catherine of Siena Parish Church, recognizing its significance as an important cultural property (ICP) and a vital religious and socio-cultural landmark. The study examined the church's historical development, architectural character, and current physical condition, identifying key deterioration issues affecting its structural integrity and material fabric. Anchored on established conservation principles from the Venice Charter and the Burra Charter, and supported by Republic Act No. 10066, the research adopted a conservation-led design approach emphasizing authenticity, compatibility, and minimal intervention (ICOMOS, 1964; Australia ICOMOS, 2013). The proposed interventions include material rehabilitation using both modern and traditional methods, reinstatement of lost architectural elements, and the integration

of modern systems such as acoustics and an ecclesiastical museum. The concept of “*Salinlahi*” frames the project as a means of preserving and transmitting cultural and spiritual values across generations. The study demonstrates that a sensitive balance between preservation and adaptation can ensure the continued relevance, functionality, and sustainability of heritage structures in contemporary settings.

Keywords: architectural conservation, adaptive re-use, ecclesiastical museum, heritage conservation, heritage church, ICOMOS, important cultural property, restoration

SEAIT-SR-03

**PUGAD DAYAW: A PROPOSED VISUAL ART CENTER IN LA TORRE,
BAYOMBONG, NUEVA VIZCAYA**

Diosa May S. Salvador & Tomas B. Binbinon Jr.

Nueva Vizcaya currently faces a quiet crisis stemming from the absence of inclusive art spaces, leading to cultural dilution and the creative isolation of local amateur artists and youth. This thesis proposes *Pugad Dayaw*, a multifunctional visual art center located in La Torre North, Bayombong, Nueva Vizcaya, designed to nurture fine arts, applied arts, and performing arts. Grounded in the philosophy that architecture must be true to its land and people, the project employed neo-vernacular architecture to reclaim Filipino identity and indigenous spatial logic. The study employed a qualitative, design-based methodology involving preliminary site investigations, SWOT analyses, and iterative stakeholder consultations. The design specifically responds to the region’s tropical climate and mountainous topography through site-sensitive strategies, including split-leveling, elevated floors for flood mitigation, and the integration of locally sourced materials such as tanguile wood, stone, and Capiz shells. Key project components included a flexible art gallery featuring movable walls, an open amphitheater, and a rosary garden. *Pugad Dayaw* is envisioned as a “living canvas” that promotes cultural reclamation and participatory design. By transforming physical structures into platforms for intergenerational exchange and community healing, this proposal asserts that dedicated cultural spaces are essential anchors for regional pride and the preservation of the collective soul.

Keywords: cultural reclamation, Filipino identity, neo-vernacular architecture, Nueva Vizcaya, indigenous spatial logic, participatory design, visual art center

SEAIT-SR-04

**CITY OF ILAGAN COLLEGE OF MEDICINE: A PROPOSED
EDUCATIONAL BUILDING OPTIMIZING FUNCTIONALITY THROUGH
SMART SPACE PLANNING**

Raina Mae R. Garcia & Vincent T. Degamo

The Philippines faces a critical healthcare workforce disparity, with a doctor-to-population ratio of 0.6 per 1,000. This shortage is most severe in rural regions like Isabela, where the lack of local training facilities leads to high financial costs and significant “brain drain.” This study proposes the architectural design of the City of Ilagan College of Medicine in Barangay Lullutan to establish a regional center

for medical excellence and to address these disparities. Grounded on CHED and DOH standards, the design utilized smart space planning, integrating building information modeling (BIM) and IoT sensors to optimize efficiency and security. A core feature was the inclusion of specialized laboratories with modular workstations and advanced safety systems. To address the tropical climate, the project employed sustainable bioclimatic design, featuring a north-south orientation that reduces solar heat gain by 26.4%, rooftop solar PV arrays, and therapeutic roof gardens. Additionally the design incorporated flood mitigation systems, including engineered embankments and rainwater retention, ensuring operational resilience. By aligning advanced infrastructure with a mission of social accountability, the project fosters a medical workforce culturally synchronized with the Cagayan Valley, ultimately democratizing healthcare education and improving provider-to-patient ratios in underserved areas.

Keywords: flood mitigation. healthcare workforce disparity; laboratory design, medical school architecture, smart *space* planning

SEAIT-SR-05

A PROPOSED MASTER DEVELOPMENT PLAN FOR THE VISITOR CENTER AND DEMO FACILITIES OF SAGUDAY ECO PARK

Judi Claire D. Cabigayan & Maeritz U. Lachica

This study is about the proposed development of an ecotourism park that supports environmental awareness, tourism, and community development. It aims to provide simple recreational, educational, and demonstration spaces for both visitors and the local community. Previous studies show that ecotourism can help improve the local economy, protect the environment, and preserve culture. However, many tourism sites still lack adequate facilities, learning areas, and sustainable planning to improve the visitor experience and involve the community more. The study used site analysis, interviews, data gathering, and basic architectural planning to develop the proposed ecotourism park. It primarily focused on the visitor center and demonstration facilities to create useful, educational spaces. The proposed ecotourism park is expected to support sustainable tourism, environmental protection, and community participation. It also shows the importance of balancing development with the preservation of natural and cultural resources.

Keywords: ecotourism park, environmental awareness, demonstration facilities, site analysis, sustainable tourism, visitor center

SEAIT-SR-06

AYWANAN: A PROPOSED SENIOR CENTER FOR ACTIVE AGING AT LA TORRE NORTH, BAYOMBONG, NUEVA VIZCAYA

Paul John G. Camat & Tomas B. Binbinon Jr.

The study entitled “Aywanan: A Proposed Senior Center for Active Aging at La Torre North, Bayombong, Nueva Vizcaya” was conducted to address the lack of dedicated community-based facilities that support the physical, social, emotional, and psychological well-being of senior citizens in the municipality of Bayombong. The study recognized that many elderly individuals remain socially active but experience limitations in mobility, accessibility, and access to spaces specifically designed for wellness, recreation, and community engagement. In response, the research aimed to

develop a senior citizen center that promotes active aging through therapeutic, accessible, and culturally responsive architectural spaces. The study utilized a descriptive and architectural planning approach through site analysis, data gathering, user analysis, and review of related literature and design standards. The study also applied principles of active aging, universal accessibility, and neo-vernacular architecture in developing the proposed design. Spatial planning considerations were guided by the National Building Code of the Philippines, BP 344, and the Fire Code of the Philippines to ensure safety, accessibility, and functionality. The findings revealed that the site possesses strong potential for senior-friendly development due to its quiet rural environment, open agricultural surroundings, natural ventilation, and accessibility to nearby residential communities. The proposed design incorporated therapeutic gardens, multipurpose spaces, wellness facilities, recreational areas, and social interaction zones intended to improve the quality of life of elderly users. The study concludes that the integration of nature-oriented, barrier-free, and community-centered spaces contributes to the promotion of active aging, independence, social participation, and overall well-being among senior citizens while strengthening community engagement within the municipality.

Keywords: accessibility, active aging, community- based facility, elderly wellness, neo- vernacular architecture, senior citizen center, therapeutic garden

SEAIT-SR-07

KAYKAYSA: A PROPOSED DEVELOPMENT OF CULTURAL HUB INTEGRATING AN ORGANIC RESTAURANT

Jhecya Mae N. Quiray & Tomas B. Binbinon

The study, “Development of a Cultural Hub Integrating an Organic Restaurant,” was proposed to address the need for cultural preservation, community engagement, and environmental awareness in Nueva Vizcaya. Using a descriptive-exploratory approach through interviews, consultations, site visits, and case study analysis, the research identified the lack of integrated cultural and agricultural facilities despite the province’s rich heritage and agricultural identity. The proposed development included cultural workshops, performance and display spaces, educational and leisure areas, and a farm-to-table organic restaurant, incorporating sustainable strategies such as natural lighting, ventilation, local materials, and landscape integration. The study concludes that the project can help preserve local traditions, promote sustainability, and strengthen community relationships through culturally sensitive and environmentally responsible architectural design.

Keywords: cultural hub, cultural preservation, neo-vernacular architecture, organic restaurant, sustainability

SEAIT-SR-08

HIRAYA: A PROPOSED SMART CONTEMPORARY CITY HOTEL INTEGRATING COMFORT AND FUNCTIONALITY IN ILAGAN CITY, ISABELA

Danica R. Ilarde & Vincent T. Degamo

Ilagan City, Isabela is undergoing rapid urban development, resulting in a growing need for lodging facilities that offer modern comfort, functional spaces, and enhanced guest experiences. Smart hotels have become a significant part of urban tourism,

providing technology-driven convenience while elevating accommodation standards. This research presents “Hiraya: A Proposed Smart Contemporary City Hotel Integrating Comfort and Functionality in Ilagan City, Isabela,” a project that merges contemporary architectural aesthetics with intelligent systems to create an efficient, comfortable, and user-centered environment. The study explored design strategies that emphasize smart technology, operational efficiency, sustainability, and adaptability to meet the needs of both local and visiting populations. By integrating smart features with contemporary design principles, the proposed hotel aims to raise the standard of urban hospitality, strengthen the city’s identity, and deliver an engaging, future-ready experience for guests. This research reflects current trends in smart hospitality development and provides a reference for future projects seeking to balance design innovation, comfort, and functionality.

Keywords: comfort, contemporary design, functionality, hospitality, Ilagan City, smart hotel,

SEAIT-SR-09

TARIPATO: A PROPOSED MULTIPURPOSE CENTER FOR DIFFERENTLY-ABLED INDIVIDUALS

Nonette T. Agmaliw & Romeo C. Romero Jr.

Despite national and international mandates for disability inclusion, differently abled individuals continue to face systemic barriers that limit their community engagement and social integration. This study proposes the architectural design of a specialized multipurpose center for differently-abled individuals in the Province of Quirino to address the urgent need for a centralized, inclusive facility. The proposed design integrated universal design principles and Batas Pambansa Bilang 344 (BP 344) standards to move beyond mere legal compliance and actively promote dignity, independence, and social equity. Strategically located in the provincial capital of Cabarroguis, the center is structured into four primary functional zones: a clinical and rehabilitative wing for therapy; administrative offices; livelihood workshops for economic empowerment; and a multipurpose hall for social integration. Through a systematic analysis of user needs, site conditions, and global case studies, the research demonstrates how inclusive architecture can serve as a vital tool for reducing social inequality. The project, with an estimated investment of 54.3 million pesos, serves as a strategic blueprint for local governance to transform social dependency into active community participation. The study concludes that such a facility is essential for bridging existing service gaps and fostering a more equitable and participatory society for differently abled individuals in the province.

Keywords: Batas Pambansa Bilang 344 , inclusive *architecture*, multipurpose center, Quirino Province. persons with disabilities (PWDS), universal design

SEAIT-SR-10

**TROPICAL MODERNISM DESIGN FOR A MULTI-STORY MIXED-USE
COMMERCIAL COMPLEX IN DARAPIDAP, ARITAO, NUEVA VIZCAYA**

Mark Andrew U. Medoza & Tomas B. Binbinon, Jr.

This study proposed a tropical modernism design for a multi-story mixed-use commercial complex in Darapidap, Aritao, Nueva Vizcaya, aimed at improving hospitality, commercial, and recreational facilities within the municipality. The study utilized descriptive research design through consultations, interviews, site visitation, and review of architectural references and building standards. Findings revealed that tropical modernism principles such as natural ventilation, passive cooling, strategic zoning, landscaping, and sustainable materials effectively address the site's accessibility, circulation, and environmental challenges. The study concludes that the proposed development could enhance tourism, economic growth, and community accessibility while serving as a sustainable and climate-responsive model for future mixed-use developments in Nueva Vizcaya.

Keywords: environmental sustainability, hospitality development, mixed-use commercial complex, multi-story development, passive cooling strategies, tropical modernism, tourism infrastructure

SEAIT-SR-11

**RAMON VERTICAL HOUSING COMPLEX: A BIOMIMETIC APPROACH
ON CREATING SENSE OF COMMUNITY IN MULTI-STOREY HOUSING
STRUCTURES**

Reynaldo A. Tugade Jr. & Tomas B. Binbinon Jr.

Vertical housing is an alternative typology to traditional housing developments such as rowhouses and horizontal residences, implying efficient use of space and resources. However, studies have shown that vertical housing has downsides including social and mental health problems arising in people living in a vertical community. This study aimed to address these problems using a biomimetic approach in which a design solution is developed from the natural behavior of hermit crabs. The proposed design incorporated socially encouraging spaces, non-monotonous living units, and sustainability in a four-hectare lot with five multi-story buildings, and is derived from gathered data through consultations, ocular visits, relevant laws and building codes. The result of this study encompasses architectural design and plans, elevation, section, and perspectives, which were further enhanced through various studies including market study, technical study, site analysis, and user analysis.

Keywords: , biomimicry, community, mental health, social health, vertical living

SAKA-HAYAN: REDEVELOPMENT OF BAGABAG DOMESTIC AIRPORT AS GATEWAY FOR SUSTAINABLE TOURISM IN NUEVA VIZCAYA

Alynnna Cassandra L. Morales & Maeritz U. Lachica

This study proposes the redevelopment of Bagabag Domestic Airport into an aero-cultural gateway that supports sustainable tourism, regional connectivity, and local economic growth in Nueva Vizcaya. The research addresses the airport's current condition as an underutilized and outdated facility that no longer complies with contemporary aviation, operational, and passenger service standards. Guided by the principles of modern vernacular architecture, sustainability, and cultural integration, the study aimed to develop a conceptual architectural design that transforms the airport into a functional, resilient, and culturally significant regional gateway that encourages environmentally responsible and community-based tourism development. The study utilized a design-based qualitative research approach involving site inspections, document analysis, case studies, stakeholder consultations, and SWOT analysis. Data gathered from the Provincial Tourism and Cultural Office, CAAP personnel, and local planning offices were analyzed to determine the airport's operational deficiencies, tourism potential, and architectural opportunities. Standards from the Civil Aviation Authority of the Philippines (CAAP), Department of Transportation (DOTr), and International Civil Aviation Organization (ICAO) were applied in developing the proposed design. Findings revealed that integrating gastronomy, cultural identity, and sustainable architectural strategies within the airport terminal can improve passenger experience while promoting sustainable tourism, local heritage, and locally produced products of Nueva Vizcaya. The proposal incorporated upgraded terminal facilities, food hubs, cultural exhibit spaces, passive cooling systems, energy-efficient technologies, rainwater harvesting systems, and climate-responsive planning. Ultimately, the study demonstrates that the redevelopment of Bagabag Domestic Airport can serve as a catalyst for sustainable tourism-driven economic development while strengthening Nueva Vizcaya's identity as a gateway to Northern Luzon.

Keyword: aero-cultural gateway, airport redevelopment, Bagabag Domestic Airport, Nueva Vizcaya, passenger terminal design, regional tourism, sustainable

SMART TRANSFORMER LOAD MONITORING SYSTEM FOR COMMUNITY-LEVEL POWER DISTRIBUTION

*Jhanssen Clyde P. Dulnuan, Hjadser Paul D. Estrella, Nicolo Idon R. Timbreza,
& Wenson R. Evangelista*

The study entitled "Smart Transformer Load Monitoring System for Community-Level Power Distribution" was conducted to develop an innovative, low-cost Internet of Things (IoT)-based monitoring and protection system capable of measuring real-time transformer parameters and providing automated overload protection for community-level power networks. Driven by the rising demand for electricity and the critical need to mitigate transformer overloading, power interruptions, and costly utility downtime, the researchers utilized an experimental and developmental research design to build and evaluate a responsive system prototype. The engineered hardware incorporated an ESP32 microcontroller as the

core processor, a PZEM-004T energy monitoring module, a relay driver module, and a magnetic contactor, all seamlessly integrated with the cloud-hosted Blynk IoT platform to track secondary-side electrical parameters specifically voltage, current, power consumption, and total load capacity percentage. Programmed with an active protective paradigm, the prototype continuously streams data to a mobile and web dashboard, pushes sequential warning notifications to operators at progressive load levels, and executes an instantaneous automated load disconnection to isolate the system from potential physical damage or burnout when a critical overload condition is reached. Rigorous laboratory testing using various household appliances validated the system against conventional, calibrated measuring instruments. The findings demonstrated that the prototype successfully performs automated telemetry, handles precise real-time alerts, and triggers reliable protective load shedding. Despite minimal and highly acceptable measurement variations under surge conditions, the results confirm that this smart monitoring configuration significantly enhances operational efficiency, reduces system strain, and provides a scalable, economically viable foundation for future smart grid applications and proactive community-level power management.

Keywords: automated overload protection, development research design, ESP32 Microcontroller, Internet of Things (IoT), PZEM-004T sensor module, Blynk IoT Platform, smart grid application, transformer load monitoring,

SEAIT-SR-14

A PROPOSED FRANCIS TURBINE GENERATOR AT BARANGAY CASAT, BAYOMBONG, NUEVA VIZCAYA

*Henri Donn J. Alayu, Adrian Rei R. Marañon, Xander Nicos C. Oribello,
& Jojo C. Mariano, RME, REE, MBA*

This study aimed to design, construct, and evaluate a Francis Turbine Generator System capable of providing a sustainable source of electricity such as for street lighting in a selected small watershed area. Specifically, the research assessed site conditions such as water flow and elevation, developed a turbine-generator system design, constructed a prototype, and evaluated its feasibility in terms of performance, cost, and application for powering 10–12 streetlight units. The methodology involved four main stages: initial planning and site assessment, data gathering and measurement of flow rate and head, analysis of hydrological data for system design, and prototype testing under actual operating conditions. The system was tested over a five-day period with three trials per day, measuring parameters such as voltage, current, and calculation of power output. The results were then used to determine system's viability and reliability. Findings revealed that the prototype generated an average power of 242.75 W from the AC generator and achieved a total output power of 311.09 W, with the battery supplying an average of 67.73 W to stabilize output. The system demonstrated a battery operation time of approximately 6.01 hours and maintained a low error margin of 2.34%. Although performance was affected by fluctuations in water flow and operational adjustments, the results confirm the feasibility of using a Francis turbine-based micro-hydropower system for sustainable street lighting in small watershed communities.

Keywords: current, power, prototype, sustainable source of electricity, voltage

SEAIT-SR-15

TRANSPARABRGY: BLOCKCHAIN-BASED BARANGAY MANAGEMENT SYSTEM FOR BLGU LA TORRE NORTH

Lance Krystian D. Andres, Marc Christian C. Delos Santos, Rohann Harold N. Mondiguing, Felix C. Leid Jr., & Adonis V. Garces,

Barangays play a role in local governance in the Philippines; however, many rely on manual or limited digital systems for record management. These practices often result in inefficiencies, data inconsistencies, security risks, and limited transparency. This study aimed to design and develop TransparaBrgy, a blockchain-based barangay management system for BLGU La Torre North, to enhance efficiency, security, and transparency in barangay operations. A descriptive and developmental research design was employed using the Rapid Application Development methodology. Data was collected through interviews, surveys, observations, and document analysis involving barangay officials and residents. The system integrated blockchain technology using Hyperledger Fabric with the MERN Stack to ensure data immutability, secure document processing, and transparent transaction tracking. The evaluation was conducted in accordance with ISO/IEC 25010:2015, Software Quality Standards. Results showed high compliance, improved service accessibility, reduced processing time, and minimized human error. The study concludes that TransparaBrgy is a viable solution for modernizing barangay management.

Keywords: blockchain technology, document management, hyperledger fabric, transparency

SEAIT-SR-16

ELAKO.NV: A DIGITAL MARKETING SOLUTION FOR THE MICRO, SMALL, AND MEDIUM ENTERPRISES (MSME'S) IN NUEVA VIZCAYA

Jenzon Emerald N. Baquiran, Nicolai Benedict D. Dela Peña, Adrian Deo B. Lacaden, Zeth Laurence R. Layno, Ferylene C. Valentin, & Rocel Audrey J. Batara

This study developed ELako.Nv, a centralized digital marketing solution designed to support micro, small, and medium enterprises (MSMEs) assisted by the Department of Trade and Industry (DTI) in Nueva Vizcaya. Despite the implementation of national digitalization initiatives, many MSMEs in provincial areas remain digitally excluded due to limited financial resources, low digital literacy, unstable internet connectivity, and the absence of inclusive and user-friendly digital platforms. This study aimed to address these challenges by creating an accessible, centralized, and DTI-integrated system that enhances MSME product visibility, customer engagement, and monitoring capabilities. ELako.Nv was developed using the rapid application development (RAD) model, allowing continuous stakeholder involvement throughout the design and development phases. Participants included DTI personnel, MSME owners, customers, and IT experts. Data was gathered from MSMEs across all 15 municipalities of Nueva Vizcaya to capture diverse business conditions, marketing practices, and levels of digital readiness. Findings revealed that although MSME registration has been digitized, DTI lacks a centralized platform to monitor MSME online visibility and customer engagement. Most MSMEs rely heavily on Facebook for promotion but face persistent challenges such as limited digital skills, insufficient manpower, inconsistent production capacity, and unreliable internet access,

particularly in remote areas. The system was evaluated using the ISO 25010:2015 Software Quality Standards, covering functional suitability, usability, performance efficiency, reliability, security, compatibility, maintainability, and portability. ELako.Nv obtained a high overall mean score of 4.75, indicating strong compliance with international quality standards and high user acceptance. The results demonstrate that ELako.Nv is a reliable and user-friendly solution that supports DTI's mandate to strengthen MSME competitiveness and resilience through sustainable digital innovation.

Keywords: Department of Trade and Industry, digitalization initiatives, digital marketing

SEAIT-SR-17

MEDISYNC: A MEDICAL INFORMATION SYSTEM FOR THE SCHOOL GOVERNANCE AND OPERATIONS DIVISION – SCHOOL HEALTH SECTION WITH DECISION SUPPORT SYSTEM

Charles K. Agustin, Canorold J. Ogaya, Mark William Pajarillo, Renato L. Peras, & IC Ramzil P. Ruiz

“MediSync: A Medical Information System for the School Governance and Operation Division–School Health Section with Decision Support System” is a web-based system developed to improve how school health records are managed and reported within the Schools Division of Nueva Vizcaya. The system was created to replace manual and paper-based processes that cause delays, data inconsistencies, and limited access to medical information. MediSync was developed using the rapid application development approach, which involves requirements planning, user design, construction, and iterative refinement based on feedback. System requirements were gathered through interviews, observations, and workflow analysis involving SGOD personnel, health workers, and selected school representatives. The system supports different user roles, including SGOD staff, health personnel, and school users, each with functions aligned to their tasks. MediSync provides centralized storage of medical records, automated report generation, and a decision support feature that assists healthcare personnel in reviewing patient data. The study found that MediSync improved efficiency, accuracy, and accessibility of health information in school health operations.

Keywords: decision support system, medical information system, school health management, web-based system

SEAIT-SR-18

VAWCare: AN INTEGRATED REPORTING AND ASSISTANCE FOR VIOLENCE AGAINST WOMEN & CHILDREN(VAWC) - A DECISION SUPPORT SYSTEM

Kevin Klein V. Ananayo, Erien Miko M. Bambalan, Desierre A. Lacerona, Ethan Jericho B. Salvador, Francis Elmo C. Valeros, & Krby Zyryll G. Perez

"VAWCare: An Integrated Reporting and Assistance for Violence Against Women and Children (VAWC) - A Decision Support System" is a research study focused on developing a secure digital platform designed to improve the reporting, monitoring, and management of VAWC cases at the barangay level. The primary objective of this

study is to provide victims with a safe reporting mechanism while equipping barangay officials with tools for efficient case management and informed decision-making. To achieve the study's goals, the researchers employed the rapid application development methodology, which encompasses four distinct phases: requirements planning, user design, construction, and cutover. Additionally, a descriptive methodology was employed to identify the challenges in handling VAWC cases, specifically in relation to data management, investigation, and decision-making processes. Barangay Bonfal Proper, Bayombong, Nueva Vizcaya was selected as the pilot site for this research. Interviews, document analysis, and observations were conducted with two barangay VAWC officers, one barangay captain, four barangay committee members, 20 women participants, ten children participants aged 16 to 17, and two IT Experts to gather relevant data. The system was developed using React.js with Vite, Node.js, Express.js, MongoDB, Firebase, JSON Rules Engine, and the Gemini API for AI-powered support. The platform was evaluated using ISO 25010:2015 as the software quality standard. The application caters to three types of users: administrators, barangay officials, and victims, each with specific roles and functionalities, including secure reporting, case tracking, emergency alerts, AI chatbot assistance, and decision support features.

Keywords: barangay management ISO 25010:2015, *Node.js*, progressive web app, *React.js*

SEAIT-SR-19

A PROPOSED ELECTRONIC RESOURCES REPOSITORY PLAN FOR SAINT MARY'S UNIVERSITY LEARNING RESOURCE CENTER

Daiselyn D. Fernandez, Girlie Kate D. Daguro, Kimberly Joyce R. Dela Cruz, Catrina C. Recto, David A. Cabonero

The rapid advancement of information technology has significantly influenced study, learning, and teaching within the academic community. This progress led to an explosion of research publications, resulting in challenges such as misinformation, disinformation, and doubts about the authenticity and credibility of sources. To address these concerns, especially the presence of predatory and hijacked journals, librarians must plan carefully when integrating free and open-access electronic resources into library collections. This study aimed to create an e-resources repository plan that would guide the proper selection, evaluation, and integration of free and open-access e-resources at the Saint Mary's University Learning Resource Center. A descriptive research design was used. Data was gathered from students, faculty, and librarians using validated instruments. Ethical standards were observed through consent forms and official clearances. Quantitative data was analyzed to determine preferences, the library's readiness in terms of collection, physical facility, human resources, policy/administration, and integration of free and open-access e-resources in teaching. The findings showed strong preferences for e-resources among all respondents. The library was found ready in terms of collections, physical facilities, human resources, and policy/administration. Regarding integration into teaching, librarians reported greater confidence in the current level of integration than faculty, with the latter group, although generally positive, indicating more room for improvement or less involvement in the process. Thus, a structured action plan was proposed to address these gaps. The study concludes that implementing the repository plan will enhance access to credible e-resources and support the university's teaching and research needs.

Keywords: e-resources, free and open-access, information technology, library, repository plan

SEAIT-SR-20

**GINGERLY AI: A CONVOLUTIONAL NEURAL NETWORK (CNN)-BASED
MOBILE APPLICATION FOR *ZINGIBER OFFICINALE* (GINGER)
DISEASE DETECTION AND REMEDY RECOMMENDATION**

*Aleriza Janica O. Garcia, Jasfer Dela Cruz, Muhammad S. Al-Batesh,
& Essel T. Cañaberal*

Gingerly AI is a mobile application that detects diseases in ginger plants (*Zingiber officinale*) and recommends appropriate remedies using a convolutional neural network. The system was designed to support ginger farmers by providing a faster, more accessible way to identify common ginger diseases through image-based classification. Developed as an offline Android application, Gingerly AI utilized technologies such as Flutter, Python, TensorFlow, and Android Studio for model training, integration, and deployment. Following the rapid application development (RAD) methodology, the study focused on dataset collection, image preprocessing, model training, and mobile application development. The dataset consisted of approximately 8,000 images of ginger leaves and rhizomes across multiple disease and healthy classes. The application provides disease detection results along with corresponding remedy recommendations to assist users in disease management and prevention.

Keywords: convolutional neural, network, mobile application, rapid application development

RESEARCH UNIT: SCHOOL OF HEALTH AND NATURAL SCIENCES

Research Coordinators: Geraldine Y. Ferreras & Cathelyn C. Mariano

Panel of Reviewers:

Area of Specialization	Name of Faculty
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Area of Specialization	Name of Faculty
	Florence N. Bahni, LPT, RPm, MAEd Reiner B. Dulawan RPm, MAEd Rowena A. Rivera, LPT, MAT Samuel Damayon, JD, MA Edwin Edilberto N. Mania, Reg. GC, EdD Allen Christopher S. Marquez, PhD

LEVEL OF KNOWLEDGE AND PRACTICES ON THE USE OF HERBAL PLANTS AMONG THE RESIDENTS IN PIEZA, VILLAVERDE, NUEVA VIZCAYA

*Brejete P. Annanayo, Clariza P. Casaldo, Krizle M. Chunanon,
& Geraldine Y. Ferreras*

Globally, herbal plants continue to play a vital role in healthcare practices, particularly in developing countries like the Philippines, where approximately 80% of the population relies on the use of herbal plants as a health remedy to treat health ailments. Although herbal plants have a cultural significance and are widely used, the Department of Health (DOH) has officially approved only ten herbal plants for medicinal use, raising concerns about the safety and efficacy of unregulated practices. This study examined the knowledge and practices related to herbal plant use among residents of Barangay Pieza, Villaverde, Nueva Vizcaya. Through a quantitative descriptive design, data was collected from 318 adult residents. Using a validated survey instrument that assessed knowledge, practices, and the use of both DOH-approved and non-approved herbal plants, the findings identified knowledge gaps regarding the ten DOH-approved herbal plants and potentially unsafe practices, which guided the development of an Information, Education, and Communication (IEC) material. Findings showed that respondents were knowledgeable about commonly used plants such as *bayabas*, *lagundi*, and *bawang*, but not knowledgeable about *niyog-niyogan* and *tsaang gubat*. Leaves were the most used plant part, primarily prepared through decoction, and taken orally for ailments like cough, colds, and fever. Practicing self-medication was common among respondents and most of them acknowledged the importance of informing healthcare professionals. Among the non-approved plants frequently used were tawa-tawa, goosegrass, lemongrass, guyabano leaves, malunggay leaves, turmeric, ginger, oregano, and aloe vera, reflecting reliance on familiar and locally available resources. This study highlights the importance of community education in promoting the safe and effective use of ten DOH-approved herbal plants, aimed to integrate such practices into evidence-based healthcare systems.

Keywords: community health education, DOH-approved herbal plants, healthcare practices, health remedy, IEC material

PHYTO-MEDIATED SYNTHESIS OF SILVER NANOPARTICLES USING *Stachytarpheta jamaicensis* (KANDIKANDILAN) LEAF AQUEOUS EXTRACT: CHARACTERIZATION AND PHOTOCATALYTIC ACTIVITY

Nyl Aldrin G. Laguit & Alicia Z. Jubay

Effective treatment of industrial effluents is essential for mitigating detrimental health effects and achieving water security. Nanotechnology revolutionizes industries by leveraging nanomaterials to advance sustainable and efficient methods for degrading stable, non-biodegradable synthetic dyes, addressing the limitations and risks associated with conventional physicochemical processes. However, further exploration of the characteristics and photocatalytic activity of phytosynthesized AgNPs (SJ-AgNPs) is warranted to evaluate their effectiveness in improving dye degradation. This study aimed to phytosynthesize SJ-AgNPs using *Stachytarpheta*

jamaicensis leaf aqueous extract and determine their characteristics and photocatalytic activity for enhanced dye degradation. Utilizing experimental design, SJ-AgNPs were phytosynthesized using *S. jamaicensis* leaf aqueous extract with a fixed volume ratio, pH, temperature, reaction time, and stirring rate, and confirmed through colorimetric analysis and ultraviolet-visible (UV-Vis) spectroscopy. The dark brown colloidal solution demonstrated a λ_{max} peak at 430 nm. Their characteristics were determined using field emission scanning electron microscopy (FESEM), Fourier-transform infrared (FTIR) spectroscopy, and energy-dispersive X-ray (EDX) spectroscopy point analysis. The polydisperse, aggregated, spherical SJ-AgNPs exhibited a size range of 35–50 nm. Identified functional groups may be due to adsorbed alkaloids, flavonoids, terpenoids, glycosides, and proteins on the SJ-AgNP surface. The SJ-AgNPs were mainly composed of carbon (43.88%) and silver (32.49%). Their photocatalytic activity in degrading methylene blue and crystal violet in the presence of UVA radiation was evaluated using the dye degradation assay. After 60 minutes, the degradation rates of methylene blue and crystal violet using 1000 µg/mL were 76.32% and 79.39%, respectively. The degradation of both dyes using 1000 µg/mL SJ-AgNPs, as the optimal catalyst concentration, followed pseudo-second-order kinetics, with rate constants of 0.6887 min⁻¹ and 0.6544 min⁻¹, respectively. These findings indicate that SJ-AgNPs can be utilized to enhance dye degradation in wastewater treatment.

Keywords: crystal violet, degradation rate, longwave ultraviolet light, methylene blue, photocatalysis

SHNS-SR-03

FORMULATION AND EVALUATION OF BOTANICAL FUNGICIDE FOR GINGER SOFT ROT USING *Mimosa pudica* (Bain-bain) CRUDE EXTRACT

Alfred Brad Psalm A. Banig III & Olivar Reimos D. Barroga, Jr.

This study investigated the potential of *Mimosa pudica* as a natural bio-fungicide against *Rhizoctonia solani*, a significant fungal pathogen causing ginger soft rot. The research involved extraction of bioactive compounds from *M. pudica*, followed by phytochemical analysis to identify the potential anti-fungal agents. Subsequently, various formulations incorporating the extract were developed and evaluated for their efficacy against *R. solani* using an agar well diffusion assay. The results demonstrated that the *M. pudica* extract exhibited weak anti-fungal activity against *R. solani*. The crude extract has some anti-fungal activity, and the higher the concentration, the better the activity. The phytochemical analysis revealed the presence of compounds known for their anti-fungal properties, including alkaloids, flavonoids, and terpenoids. The formulated botanical fungicides, particularly those incorporating optimal concentrations of the extract, demonstrated anti-fungal activity. This study provides evidence for the potential of *M. pudica*-base to be used as a bio-fungicide. However, the concentration of crude extract should be high to show significant inhibition. The results showed that the biofungicides are somewhat potent against the fungal pathogen. However, bio-fungal fungicides still come short in efficacy compared to their synthetic or commercial counterparts. Further research to explore other viable plant alternatives with higher anti-fungal activity is needed to optimize the formulation process and explore the commercial viability of these bio-fungicides.

Keywords: agar-well diffusion assay, anti-fungal properties, bio-fungicide
fungal pathogen, phytochemical analysis,

SHNS-SR-04

FORMULATION OF TOPICAL CREAM BASED ON THE SYNERGISTIC PROPERTIES OF *Mikania micrantha* and *Ageratum conyzoides*

Rhazbhelle Mae L. Dulnuan & Alicia Z. Jubay

Antibacterial creams are essential for treating skin infections, but bacterial resistance can reduce their effectiveness. The growing challenge of antimicrobial resistance has spurred research into alternative agents, including natural products with antimicrobial properties. This experimental study investigated the synergistic antibacterial potential of *Mikania micrantha* and *Ageratum conyzoides* for cream formulation. The ethyl acetate extract of *M. micrantha* and *A. conyzoides* was used as an active ingredient. It is revealed in the phytochemical screening, minimum inhibitory concentration (MIC), minimum bacterial concentration (MBC) that the plants contain antibacterial compounds, in (MIC). The individual MIC of *M. micrantha* against *S. aureus* showed activity on 7.8 µg/mL, while *A. conyzoides* showed no activity against the same bacteria. The 1:1 combination was effective at 1.95 µg/mL against *S. aureus*, but all combinations were ineffective against *E. coli*. Although MIC-guided concentrations were initially used for formulation, they failed in agar well diffusion tests. However, higher concentrations (7.8µg/mL and 15.625 µg/mL) demonstrated antibacterial activity against *S. aureus* and *E. coli*. This suggests that higher concentration levels in the formulation and the use of the standard (5) pH can improve bacterial inhibition. The negative control confirmed that the cream base alone had no antibacterial effect. The cream's safety was tested using *Rattus norvegicus* albino rats, employing the skin sensitivity test method over a three-day period, and showed neither skin irritation nor an unpleasant reaction. This implies that the formulation may be considered for more extensive testing of its safety. The plant also has potential for further studies, either individually or in combination with other plants.

Keywords: agar well diffusion, ethyl acetate extract, minimum bacterial
concentration, minimum inhibitory concentration, plant synergy

SHNS-SR-05

ANTIPARASITIC POTENTIAL OF *Allium fistulosum* (GREEN ONION) CRUDE EXTRACT ON HELMINTHS OVA

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Allium fistulosum, also known as green onion, is a perennial plant that is a well-distinguished member of the *Amaryllidaceae* family, and has been considered to be a potential antiparasitic agent against *Ascaris lumbricoides* and *Trichuris trichiura*. This experimental research determined the anti-parasitic potential of *A. fistulosum* crude extract against ova of helminths, specifically, *A. lumbricoides* and *T. trichiura*. Stool specimens were collected from children to evaluate the extent of structural damage parasite ova. Two diagnostic techniques were employed, namely direct fecal smear and the formalin-ether sedimentation method to isolate the ova. The treated samples were incubated for varying periods to determine the most

effective and rapid action of the crude extract on the ova. The study achieved a percentage yield of 14.29%, demonstrating that the extraction method was effective in obtaining a substantial amount of crude extract. In addition, the fresh extract, 75%, and 100% crude extracts were identified as the most effective concentration. A seven-day exposure to *A. fistulosum* extract resulted in significantly greater effectiveness compared to shorter durations of 24, 48, and 72 hours. The study also revealed significant total changes in both qualitative and quantitative parameters, highlighting the impact of the *A. fistulosum* crude and fresh extracts. Moreover, the study reinforces the value of integrating scientifically supported herbal treatments into modern healthcare systems as a viable and accessible approach to managing parasitic infections.

Keywords: ascariasis, direct fecal smear, period of incubation, sedimentation technique, trichuriasis

SHNS-SR-06

POTENTIAL ALTERNATIVE SERUM AND URINE CREATININE REAGENT FROM THE PHENOLIC CONTENT OF THE *Cymbopogon citratus* (LEMONGRASS) LEAVES EXTRACT

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Accurate assessment of kidney function is essential for early detection, diagnosis, and management of renal diseases, with serum and urine creatinine levels serving as widely used biomarkers for evaluating glomerular filtration rate (GFR). The study was conducted to assess the potential of lemongrass phenolic crude extract (LPCE) as an alternative reagent for the determination of creatinine levels in serum and urine. The study employed an experimental-comparative design to evaluate its effectiveness as a natural and sustainable alternative using the Jaffe Kinetic Method and a commercial Profame reagent kit as controls. Phenolic extraction was achieved using column chromatography, and total phenol content was measured using the Folin-Ciocalteu method. The researchers assessed the percent yield of LPCE and tested four concentrations: 100%, 75%, 50%, and 25% to determine the best formulation. The extract was formulated into a test reagent and applied to serum and urine samples collected from five volunteer donors. Included in the results of this research, a 23.01% phenolic yield was produced from lemongrass leaves, with 6.25% LPCE identified as the most suitable concentration for serum creatinine determination, showing comparable performance with the standard reagent in terms of pH, color intensity, and accuracy. Therefore, the hypothesis asserting no significant differences among phenolic crude extract concentrations in total phenolic content is rejected, whereas the hypothesis proposing no significant difference in performance relative to the standard creatinine reagent is accepted. Overall, the study developed a lemongrass-based creatinine reagent as a safer, more affordable, and eco-friendly alternative to synthetic reagents, using locally sourced materials to reduce costs and reliance on imports.

Keywords: column chromatography, jaffe kinetic method, kidney function test, phenolic extract, picric acid

SHNS-SR-07

ANTIBIOFILM ACTIVITY OF COCONUT (*COCOS NUCIFERA*) LEAFLETS AGAINST MICROORGANISMS CAUSING NOSOCOMIAL INFECTIONS

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Nosocomial infections pose a significant threat to patients' health, particularly with the rise of biofilm-forming microorganisms that are resistant to conventional treatments. This study determined the antibiofilm activity of coconut leaflets on selected biofilm-forming bacteria and fungus. Coconut leaflets were extracted and processed to obtain crude extract using aqueous, ethanol, and methanol solvents. Minimum inhibitory concentration (MIC) was determined to evaluate the effectiveness of the various solvents against *S. aureus*, *P. aeruginosa*, and *C. albicans*. After that, eradication assay was done by staining the wells with preformed biofilm using crystal violet. The visualization of both biofilm inhibition and eradication was observed under the microscope. Results showed that among the three solvents, ethanolic extract of coconut leaflets with a 1:2 dilution concentration was found to effectively inhibit the biofilm of *S. aureus*, *P. aeruginosa*, and *C. albicans*, with a biofilm inhibition of 44%, 77%, and 50%, respectively. Results of the microscopic observation, based on the presence of bacterial cells, yeast cells, microcolonies, pseudohyphae/true hyphae, and reduction in the coverage of biofilm formed, showed that the biofilm inhibition activity of ethanolic extract of coconut leaflets with 1:2 dilution concentration was found to be significantly effective against all three microorganisms. With the same parameters, the biofilm eradication activity of ethanolic extract of coconut leaflets with a 1:2 dilution concentration was found to be lacking. These findings prove that the coconut leaflets have antibiofilm activity with 1:2 dilution concentration of ethanol as the solvent. This suggests its potential to be a biofilm inhibitor against nosocomial infection-causing microorganisms in the hospital setting.

Keywords: biofilm, biofilm eradication, biofilm formation, microcolonies, minimum inhibitory concentration

SHNS-SR-08

HEMAGGLUTINATION EVALUATION OF PLANT EXTRACT FROM TARO (*Colocasia esculenta*), PANDAN (*Pandanus amaryllifolius*), AND TOBACCO (*Nicotiana tabacum*) IN ABO BLOOD GROUP

Shaira Mae M. Campo, Kharizze Shane D. Cia, Trisha Gabrielle D. Cureg, Xiaochin Jenine M. Amawan, Alliane Jade L. Dayuwan, Lharina Mae G. Patani, & Leonard M. Bulan

Lectins are carbohydrate-binding proteins widely found in plants, recognized for their capacity to agglutinate red blood cells by binding to surface antigens. This study evaluated the hemagglutination activity of plant extracts containing lectins from taro (*Colocasia esculenta*), pandan (*Pandanus amaryllifolius*), and tobacco (*Nicotiana*

tabacum) in relation to ABO blood group typing. Aqueous extraction followed by dialysis was used to purify lectins in the plant extracts. Percent yield analysis showed that tobacco produced the highest yield, followed by taro and pandan. Hemagglutination activity was then evaluated through macroscopic reaction grading using slide tests and tube methods. Despite its high yield, tobacco extract showed no visible agglutination. In contrast, taro extract exhibited moderate agglutination with blood types B and AB, while pandan extract exhibited moderate agglutination with types A and AB. Specificity testing using antibody titration confirmed that both taro and pandan extracts could induce agglutination even at lower concentrations, indicating strong and specific lectin activity. Statistical analysis using one-way ANOVA revealed a significant difference in hemagglutination activity among the plant extracts, confirming that the type of extract influences reactivity. The findings indicated that taro and pandan extracts containing lectins possess strong, specific hemagglutination properties, supporting their potential use as natural reagents in ABO blood typing. Their ability to induce agglutination even at lower concentrations highlights their promise as eco-friendly, cost-effective alternatives to synthetic reagents in clinical diagnostics.

Keywords: antibody titer, dialysis purification, plant extract containing lectins, slide test, tube method

SHNS-SR-09

COLLAGEN-BASED AGAR MEDIA (CBAM) FROM TILAPIA FISH SCALES FOR ASSESSING BACTERIAL GROWTH AND ANTIMICROBIAL SUSCEPTIBILITY IN COLLAGENOLYTIC BACTERIA

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& Jason Arnold L. Maslang*

Utilizing collagen extracted from tilapia fish scales (*Oreochromis niloticus*) introduces a sustainable, resource-efficient approach by repurposing fishing industry waste and providing a potential nutritional resource for collagenolytic bacteria. This quantitative experimental research assessed the effectiveness of collagen-based agar media (CBAM) sourced from tilapia as a viable substrate for cultivating collagenolytic bacteria and determining antimicrobial susceptibility. Acid extraction was employed to obtain soluble collagen. Morphological and cultural characteristics of the bacterial strains were compared with their growth on blood agar (control) and CBAM. The zones of inhibition (ZOI) were determined using the Kirby-Bauer Disk Diffusion Method, and the results were compared with those of the CLSI breakpoints. The study revealed that acid extraction proved effective for obtaining collagen from dried fish scales, yielding 47 mL of collagen per 250 grams of scales. CBAM significantly impacted bacterial growth and morphology: *Staphylococcus aureus* showed notable changes in colony morphology and medium color due to collagen-degrading activity. *Escherichia coli* exhibited minimal alterations, indicating a lack of collagenolytic activity. Additionally, the presence of collagen in Mueller-Hinton Agar (MHA) affected antimicrobial susceptibility; *S. aureus* became resistant to clindamycin, suggesting collagen interference with the antibiotic, whereas *E. coli* remained susceptible to meropenem. These results indicate that CBAM from tilapia collagen effectively assesses the growth and antimicrobial susceptibility of collagenolytic bacteria, indicating its potential as a selective or differential medium to establish the characteristics of these bacteria.

Keywords: differential media, *Escherichia coli*, selective media, *Staphylococcus*

SHNS-SR-10

***SANDORICUM KOETJAPE (SANTOL) PEELS METHANOLIC EXTRACT
AS A FIXATIVE FOR MUSCLE TISSUES***

Ashlyn Yvonne T. Tolentino, Maraya Guane A. Tuguinay, & Leonard M. Bulan

Santol is not just a fruit that is consumed during its season. In ancient times santol leaves were used as an alternative for formalin. Santol leaves were put on top of the dead to preserve them. They practiced this without them having the knowledge that it had a component with the capacity to preserve. Recent studies show that it has high tannins in its component. This compound exhibits various characteristics that can serve as a good fixative. Thus, this experimental study determined the potential of santol (*Sandoricum koetjape*) peel methanolic extract as fixative for muscle tissue. Crude extraction was performed to obtain the methanolic extract of santol peels that will be used in the tissue processing. The gross characteristics of the tissue were graded using the standard of grading of gross tissue characteristics and sectioning from the book of Bruce-Gregorios. The results obtained were compared with the control which is the 10% neutral buffered formalin. The 10% neutral buffered formalin (NBF) used as the control provided excellent tissue fixation. It effectively preserved tissue morphology with minimal artifacts. In contrast, the 5% SPME concentration resulted in poor fixation. Significant tissue shrinkage, swelling, and bacterial decomposition were observed. Furthermore, sectioning was difficult, and good ribbon formation was rarely achieved. The 10% SPME concentration showed improved fixation quality compared to 5% SPME. Only minimal shrinkage, swelling, and bacterial degradation were present. Sectioning performance also improved, producing better ribbons. In particular, the 20% SPME concentration performed comparably to 10% NBF. It effectively inhibited bacterial decomposition, minimized tissue shrinkage and swelling, and allowed for optimal sectioning with consistent ribbon quality.

Keywords: cardiac muscle, crude extraction, gross tissue characteristics, sectioning, skeletal muscle, smooth muscle

SHNS-SR-11

***FORMULATION AND EVALUATION OF CORCHORUS OLITORIUS
(JUTE) LEAF EXTRACT - BASED ANTI-AGING SERUM: A STUDY OF ITS
SKIN HYDRATION PROPERTIES***

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Darleen B. Calderon, Chloe R. Lopez, Kim Russel J. Abellana,
& Melchora M. Bautista*

As the demand for a safer, plant-based anti-aging option grows, *Corchorus olitorius* (*C. olitorius*) appears a viable botanical active owing to its antioxidant-rich

phytochemical contents. The study formulated and assessed an anti-aging serum based on *C. olitorius* leaf extract. A descriptive-comparative experimental design using animal models, with positive and negative controls and varying extract concentrations, was used to assess treatment effects and possible dose-dependent responses. *C. olitorius* leaves were gathered, dried, and then extracted using ethanol, after which Thin Layer Chromatography (TLC) was conducted, confirming the presence of important bioactive compounds such as flavonoids and phenols. Serums containing concentrations of 1%, 5%, and 10% were formulated and applied topically to *Cavia porcellus*. Skin hydration, elasticity, oil, and age were assessed through corneometric analysis, while the Draize skin irritation test was employed to evaluate its biocompatibility. Results showed that among the formulations, the 10% *C. olitorius* serum exhibited the most exceptional enhancement in hydration +160.27% and elasticity +29.47%, more than the commercial positive control. The optimized 10% formulation showed consistent physicochemical characteristics, such as viscosity, pH, consistency, and stability during storage. Draize skin irritation test showed no irritation at any concentration, indicating excellent biocompatibility. These findings confirmed that *C. olitorius* leaf extract is a potent, safe, and effective phytoformulation for anti-aging skincare. Its excellent hydration and antioxidant properties support its application as a natural anti-aging alternative in cosmetic dermatology.

Keywords: antioxidant, bioactive compounds, corneometric analysis, draize skin irritation, hydration

SHNS-SR-12

TOXICITY ASSESSMENT OF *Passiflora foetida* Linn. (Kurumbot) LEAF EXTRACT: BASIS FOR OPTIMAL DOSAGE FORMULATION OF ANALGESIC AND ANTI-INFLAMMATORY SOFT LOZENGES

Erika Noelle A. Lunag, Althea Alyson R. Ambojnon, Jorimae G. Baguan, Syb W. Chagulon, Judith M. Lopnao, & Melchora M. Bautista

Passiflora foetida is a medicinal plant traditionally used for its therapeutic properties, yet its safety profile remains underexplored. This study was conducted to determine the toxicity, safety profile and pharmaceutical value of the formulated *Passiflora foetida* soft lozenges. The study employed a descriptive experimental design. Ethanol extracts of *P. foetida* leaves were prepared and administered to female Swiss albino mice at varying doses calculated per kilogram of body weight. Test animals were observed for mortality within 24 hours, and after fourteen days blood and biochemical analyses were conducted. Distilled water and Tween 80 served as control treatments, and the collected data were systematically recorded and analyzed. Results revealed that single oral doses ranging from 50 to 2000 mg/kg did not produce mortality or abnormal behavior within 24 hours, indicating safety at all tested levels. In repeated dosing, 250 mg/kg maintained stable blood profiles and normal biochemical markers, while 500 mg/kg produced elevations in creatinine and liver enzymes, reflecting mild organ stress. General physical conditions, including weight gain and behavior, remained comparable between treated and control groups. Additionally, a soft lozenge containing 250 mg/kg of the extract was successfully formulated, demonstrating uniformity and acceptable disintegration time, from six to eight minutes. The results demonstrated that *P. foetida* extract is well tolerated at lower tested concentrations and may be developed further as a safe, plant-based therapeutic agent.

Keywords: acute oral toxicity, disintegration rate, biochemical markers, hematological parameters, subacute oral toxicity

SHNS-SR-13

**FORMULATION OF ANTIMICROBIAL AND WOUND-HEALING CREAM
OF THE BIOSYNTHESIZED SILVER NANOPARTICLES (AGNPS)
CAPPED WITH METABOLITES FROM *Chromolaena odorata*
(HAGONOY)**

Geri Lyzl K. Pido, Bryan Jay B. Baliwang, Frances Deana A. Perez, Judy Ann A. Pumihic, Sarah Mae A. Yadao, & Elsa L. Cajucom

This study investigated the potential of biosynthesized silver nanoparticles (AgNPs), derived from the ethanolic extract of *Chromolaena odorata* (Hagonoy), as an antimicrobial and wound-healing agent. The research followed a comparative-experimental design, in which the AgNPs were characterized for their morphology, tested for antimicrobial efficacy, and subsequently evaluated in vivo using Albino Wistar rats. The AgNPs were synthesized and characterized using UV-Vis spectroscopy and Scanning Electron Microscopy (SEM). UV-Vis analysis revealed absorbance peaks between 410 and 450 nm, while SEM showed spherical and irregularly shaped nanoparticles ranging from 106 to 186 nm. Antimicrobial activity was assessed using the Kirby-Bauer method at three concentrations (50, 100, and 200 mg/mL). Among these, the 100 mg/mL formulation exhibited the largest zone of inhibition, showing strong antibacterial activity against *Staphylococcus aureus* and partial activity against *Escherichia coli* and *Candida albicans*. In in-vivo testing, an excision wound model in Albino Wistar rats demonstrated that the 100 mg/mL AgNPs-Hagonoy cream achieved complete wound healing by Day 9, comparable to the positive control. Hypersensitivity assessments, including scratch and patch tests, showed no signs of skin irritation at different evaluation intervals. Overall, biosynthesized silver nanoparticles capped with Hagonoy metabolites exhibited significant antimicrobial and wound-healing properties without inducing hypersensitivity. These findings highlight the relevance of green chemistry in nanomedicine and support the potential of AgNPs-Hagonoy cream as an adjunct to antimicrobial therapy and as an alternative to wound-care applications.

Keywords: biosynthesis, green chemistry, metabolites, nanomedicine nanotechnology,

SHNS-SR-14

**PHARMACOLOGICAL EVALUATION OF PIPINONG-GUBAT (*Melothria pendula* L.) AS A NOVEL ANALGESIC AND ANTIPYRETIC WITH
CYTOTOXIC ASSAY**

Criselle Ann I. Lorenzo, Aira Joy R. Arellano, Rica Yvette R. Yamballa, Neille Diedre M. Canayan, Ayana Klair M. Chunanon, & Melchora M. Bautista

Modern pharmacology prioritizes finding novel, effective, and safe therapeutic agents for common health issues like pain and fever, often avoiding the adverse side effects of nonsteroidal anti-inflammatory drugs. Despite the known adverse gastrointestinal effects of conventional NSAIDs, there remain limited studies investigating *Melothria pendula* L. as a potential safer plant-based alternative for pain and fever management. This study evaluated the analgesic and antipyretic properties of *M. pendula*, as well as its cytotoxic profile. The study utilized an experimental design where the ethanolic crude extract was subjected to acetic acid-induced writhing test and yeast pyrexia model using Swiss albino rats to assess its analgesic and antipyretic activity, respectively. Brine shrimp lethality assay was performed to determine the cytotoxic profile. Results in the ethanolic crude extraction revealed a percentage yield of 16.13% suggesting a substantial amount of ethanol-soluble phytochemicals. An analgesic test revealed that oral administration of the extract at 200 mg/kg has 85.7% inhibition compared to the positive control (48.6%), indicating a potential local analgesic effect. In contrast, the antipyretic evaluation revealed that the positive control (paracetamol) showed the most significant temperature reduction, while the crude extract-treated groups maintained slightly higher temperatures. Comparison showed that while the extract significantly decreased pain responses, it showed no meaningful improvement in fever reduction, implying selective analgesic effectiveness but limited antipyretic benefit. Cytotoxicity testing yielded an LC₅₀ value of 7.86 ppm, suggesting toxicity based on Meyer's toxicity scale. These findings suggest that *M. pendula* contains bioactive constituents with potential analgesic effects but lacks significance in reducing fever. Overall, this study provides baseline pharmacological data on *M. pendula*, supporting its potential as a natural source of analgesic agents and guiding future research on its medicinal properties.

Keywords: acetic acid-induced writhing test, bioactive compounds, brine shrimp lethality assay, herbal medicine, yeast pyrexia model

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STEH-SR-01

**PERCEIVED LEVEL OF STRESS AND COPING MECHANISMS AMONG
BUREAU OF JAIL MANAGEMENT AND PENOLOGY PERSONNEL IN
SOLANO, NUEVA VIZCAYA**

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Nartates, Kenneth Bryl D. Noto, & Gerome H. Bautista*

This study argues that understanding the perceived stress levels and coping mechanisms of Bureau of Jail Management and Penology (BJMP) personnel is essential to developing targeted interventions that enhance their well-being and organizational effectiveness. Conducted at the BJMP Solano District Jail in Nueva Vizcaya during the first semester of School Year 2025–2026, the research employed a quantitative-qualitative descriptive design with purposive sampling of active personnel. Findings revealed that stress was present to a little extent, with nearly equal levels attributed to internal and external factors. Among internal stressors, the strongest source was fear of committing team mistakes that may result in disciplinary consequences, while other sources included traumatic experiences and strained colleague relationships. External stressors were dominated by family responsibilities, particularly the emotional demand of parenthood, alongside concerns about personal health, safety, and community perception. Despite these pressures, BJMP personnel demonstrated resilience by adopting interconnected coping mechanisms: spiritual and religious practices such as prayer, physical and recreational activities, social and emotional support from family and colleagues, and positive cognitive strategies to maintain optimism and reduce anxiety. These findings highlight the personnel's reliance on culturally grounded and community-oriented coping approaches, underscoring the role of faith and family in stress management. Based on the findings, the study proposed the "BJMP Ginhawa Personnel Well-being Recommendations," which highlight psychosocial, interpersonal, and physical wellness programs. Regular stress assessments, open forum, and institutional support were proposed for administrators, while personnel were encouraged to sustain effective coping practices and minimize avoidance strategies.

Keywords: interpersonal, jail officer, psychosocial, stressors, well-being

STEH-SR-02

**THE LEVEL OF IMPLEMENTATION AND EFFECTIVENESS OF THE
REHABILITATION PROGRAM OF THE NUEVA VIZCAYA PROVINCIAL
JAIL TO PERSONS DEPRIVED OF LIBERTY**

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Alex Jr M. Lodriguito, & Jonathan P. Vergara*

This study examined the level of implementation and effectiveness of the rehabilitation program at the Nueva Vizcaya Provincial Jail, focusing on its impact on the personal development and reintegration of persons deprived of liberty (PDLs). The primary aim was to evaluate how well the program components, including educational, livelihood, moral-spiritual, and behavioral interventions, were executed and how effectively they contributed to the rehabilitation and reintegration of PDLs into society. This investigation sought to assess the status of the program, identify gaps, and assess areas that require strategic improvements. It employed a quantitative, descriptive-correlational type of research, and focused on measuring the implementation of various rehabilitation interventions, including educational

programs, livelihood training, moral-spiritual guidance, and behavioral therapy. The survey questionnaires were distributed to both PDLs to capture different perspectives on the program's effectiveness. Findings revealed that while the rehabilitation program is generally implemented, gaps remain in areas such as consistency, resource availability, and follow-up support. The respondents acknowledged the program's potential in reducing recidivism and promoting personal development but highlighted the need for enhanced support systems. The study concludes that the rehabilitation program is moderately effective that requires strategic improvements. It recommends increased funding, regular training for facilitators, and stronger partnerships with external organizations to ensure more comprehensive rehabilitation efforts.

Keywords: persons deprived of liberty, rehabilitation programs

STEh-SR-03

LEVEL OF SECURITY SATISFACTION AMONG COLLEGE STUDENTS AT SAINT MARY'S UNIVERSITY

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Neil Bryan V. Caoile, & Juni P. Caligue*

This study assessed university students' satisfaction with campus security measures, focusing on first-line defense, second-line defenses, and monitoring systems. The study can help the university identify security weaknesses, risks, and areas needing improvement. Respondents were selected using convenience and quota sampling based on availability, allowing for quicker and more cost-effective data collection. Data was gathered through a quantitative survey involving 498 randomly selected students from Saint Mary's University during their free time in classrooms. The objective was to determine students' satisfaction with campus security. The survey questionnaire was adapted from Mr. Caligue's 2015 study, *The Security Management of Saint Mary's University Bayombong, Nueva Vizcaya*, and included demographic variables such as gender, year level, and school. Descriptive statistics, including mean and standard deviation, were used for data analysis. Findings showed most respondents were female and second-year students, with a balanced distribution across schools. While gender and year level had little effect on satisfaction, significant differences were observed across schools. Results from 498 respondents showed overall satisfaction across all areas, with the highest rating for visitor verification and the lowest for uniform enforcement. Gender and year level had no significant impact on satisfaction, except for the monitoring system, where males reported higher satisfaction than those who preferred not to disclose their gender. Significant differences were found across schools, with SEAIT students reporting the highest satisfaction. Students at Saint Mary's University are generally satisfied with campus security, but to ensure equitable and consistent safety, it is recommended protocols be standardized across schools, to improve weaker areas like parking surveillance, enforce uniform policies fairly, enhance infrastructure with more CCTV and lighting, promote inclusive access, and disseminate findings through informative pamphlets.

Keywords: campus safety, physical security infrastructure, risk assessment, security measures, student satisfaction

STEHR-SR-04

**ASSESSING THE PREVALENCE OF COMMUTING CHALLENGES AND
COPING MECHANISMS OF COMMUTERS IN BAYOMBONG, NUEVA
VIZCAYA**

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Rex IV L. Apolonio, Josias P. Pajarillaga, & Jones K. Liwan*

Bayombong, the capital town of Nueva Vizcaya, is undergoing rapid development, leading to increased commuting for work, education, and daily activities. This growth has introduced challenges such as traffic congestion, extended travel times, and limited public transport, affecting productivity and well-being. Understanding these issues is vital for shaping effective policies and commuter support programs. This study employed a quantitative, descriptive-comparative design, using a validated survey questionnaire administered to 200 respondents across seven barangays. Results revealed that commuters generally agreed on the presence of transportation challenges, particularly overcrowding, delays, poor road conditions, and congestion. Economically, fare increases and daily expenses caused financial strain, while psychologically, stress and frustration were common, though not perceived as severely harmful. Coping mechanisms were rated “to a great extent,” including leaving early, budgeting, and practicing patience. No significant differences were found across commuter types, indicating commuting is a shared experience among students, professionals, and non-professionals. These findings emphasize the need for system-wide improvements in transport infrastructure, fare regulation, and commuter support programs to enhance efficiency, affordability, and well-being.

Keywords: budgeting, economically, stress, traffic, transportation

STEHR-SR-05

**SILENT BATTLES: EXPLORING THE STRESS, COPING MECHANISM,
AND LIFE HABITS OF INCARCERATED WOMEN IN NUEVA VIZCAYA
PROVINCIAL JAIL**

*Farah Grace B. Estimada, Irish Chelsae S. Estrella, Jan Wesley M. Maranion, Jeula
Belle P. Marquez, Rochelle Chubby B. Santiago, & Erwin D. Naval*

Incarceration introduces complex psychological, social, and institutional challenges for Persons Deprived of Liberty (PDLs), with women often facing disproportionate hardships and gender-specific issues during confinement. This study explored and analyzed the stress levels, coping mechanisms, and life habits of incarcerated women at the Nueva Vizcaya Provincial Jail to understand their impact on well-being and provide evidence-based recommendations. A qualitative, descriptive research design employing thematic analysis was used to systematically interpret detailed narratives of participants’ daily routines and psychosocial challenges. Five (5) incarcerated women were selected through purposive sampling within the female dormitory of the provincial facility. Data was gathered through semi-structured, face-to-face interviews in a respectful and empathetic manner under institutional supervision. Findings revealed that the primary sources of stress involved isolation from family, particularly separation from children, mental strain from the prison environment, and uncertainty regarding legal proceedings. To manage these silent battles, the participants employed resilience-building coping strategies such as physical activity (Zumba and sports), strong spiritual engagement through prayer and Bible study,

and creative outlets like crafting and beadwork. Daily life habits were strictly shaped by institutional regulations. While basic medical care was accessible, participants noted a lack of nutritional variety in meals and a reliance on external support from families for hygiene supplies. The study concludes that while incarceration poses significant emotional hurdles, supportive programs focusing on emotional expression, social connection, and personal growth are essential for adaptation. Recommendations include enhancing mental health support and implementing the proposed “Feelings Identification Activity” outreach program to foster emotional healing and successful rehabilitation.

Keywords: coping mechanisms, incarcerated women, life habits, persons deprived of liberty (PDL), stress

STEh-SR-o6

INTERSECTIONALITY OF MOTIVATIONAL FACTORS AND SOCIAL DIMENSION IN STUDYING CRIMINOLOGY AT SAINT MARY’S UNIVERSITY, PHILIPPINES

Charls Irving D. Domingo, Earl Marcus Aniel V. Bacud, Wylie Jude A. Depuno, Fea Nichias Yodyod, & Rheena Niña S. Salinas

This research focused on correlating the motivations of the respondents of Saint Mary’s University, Philippines on pursuing Criminology as their college program. This study allowed the researchers to identify those factors in terms of the students pursuing the criminology program. This study was accomplished with the objective of determining the motivations of the respondent’s level of motivation in pursuing a criminology program based on their personal interest, career plans, and peer pressure or social influence. This study utilized a strategic random sampling method to select its respondents and consolidated responses from 120 respondents, 30 from the first years, 30 from the second years, 30 from the third years, and 30 from the fourth years. The findings showed that the highest level of motivation of the respondents was career plans which had a mean of 3.14. The second variable, which is personal interest had a mean of 3.10 while the third variable which is peer pressure had the lowest mean of 2.87. Based on these findings, the researchers created an informational flyer to encourage incoming first year students to enroll in Bachelor of Science in Criminology at Saint Mary’s University located at Bayombong, Nueva Vizcaya, Philippines to boost the number of criminology students in the succeeding years.

Keywords: ethnic group, educational background, gender differences, power, sample size

STEH-SR-07

**TUNGTUNGAN AND KATARUNGANG PAMBARANGAY: COMMUNITY
PERSPECTIVE ON THE SATISFACTION AND PREFERENCE IN
CONFLICT RESOLUTION**

*Samuel G. Dacumos, Jr. , Dizon C. Madalipay, Cromwel King M. Pumihic, Rayesan,
& Samuel B. Damayon*

This study examined the level of satisfaction and preference of residents of Barangay Ammoweg, Ambaguio, Nueva Vizcaya, regarding the Katarungang Pambarangay and the Tungtungan System as mechanisms for resolving community disputes. It also explored the influence of selected demographic characteristics on residents' perceptions of the two systems. The study employed a quantitative research design supplemented by qualitative data to provide a broader understanding of residents' experiences and perspectives. Data was gathered through a structured questionnaire and an open-ended question. Quantitative data was analyzed using descriptive and inferential statistical methods, while qualitative responses were analyzed using thematic analysis. The findings revealed that residents were generally satisfied with both the Katarungang Pambarangay and the Tungtungan System as community-based dispute resolution mechanisms. However, the Tungtungan System was slightly preferred due to its cultural relevance, accessibility, and emphasis on restoring harmony within the community. Most demographic variables did not significantly influence residents' satisfaction and preference. Nevertheless, educational attainment and ethnicity showed significant differences. Respondents with lower educational attainment tended to favor the Tungtungan System due to its familiarity and culturally grounded practices, while those with higher educational attainment appreciated the formal structure of the Katarungang Pambarangay. Likewise, Tuwali respondents demonstrated a stronger preference for the Tungtungan System than Ilocano respondents. The study concluded that both mechanisms complement one another in promoting effective and culturally responsive community dispute resolution.

Keywords: alternative dispute resolution, community conflict resolution, ethnicity, justice system, traditional conflict resolutions

STEH-SR-08

**THE PILLAR OF THE FAMILY: A PHENOMENOLOGICAL STUDY ON
THE CONCEPT OF TAGASALO AMONG MALE BREADWINNER
STUDENTS**

*Joedelyn V. Fabian, Kruscheve Drake D. Allascon, Jon Edilbert L. Lumanglas,
Jenny B. Torres, & Kristine Ann L. Israel*

Many Filipino households rely on young men who assume responsibilities beyond their age. In Bayombong, Nueva Vizcaya, male students often become breadwinners, balancing academic demands with the obligation to support their families. Rooted in the *tagasalo* personality, this role reflects deeply ingrained Filipino values such as *kapwa*, *pakikisama*, and *utang na loob*. This phenomenological study examined the lived experiences of 15 male undergraduate students identified as absolute *tagasalos* through the Tagasalo Personality Scale. Using face-to-face semi-structured interviews and thematic analysis, seven themes emerged: breadwinner/*tagasalo* as identity; self-sacrifice; caregiving and emotion masking; crisis situations; coping strategies and sources of strength; contradicting burden and pride in helping; and

normalization of role and responsibility. Findings revealed a deeply internalized provider identity shaped by emotional labor, cultural expectations, and hidden sacrifices. The study highlights the need for targeted institutional support, accessible mental health services, and acknowledgment of the invisible burdens carried by student breadwinners.

Keywords: cultural values, emotional labor, family responsibility, psychological well-being, sacrifices, student providers

STEHR-SR-09

THE RELATIONSHIP BETWEEN PERCEIVED PARENTAL CLOSENESS AND SELF-ACCEPTANCE AMONG SEXUAL MINORITY STUDENTS IN A PRIVATE HIGHER EDUCATION INSTITUTION

Roselyn G. Rasonable, Katherine Nicole M. Caguin, Raquel S. Bongcac, Eugeneanne Faye M. Rosario, & Joanna Edelle R. Mania

Parental closeness is widely considered a key influence on a child's well-being and self-esteem, particularly in navigating identity development and self-acceptance. This study investigated the correlation between perceived parental closeness and self-acceptance among sexual minority students at a private higher education institution, a relationship traditionally considered influential in identity development. Surveying 105 sexual minority students, the study noted a balanced distribution across sexual minority groups, with a significant portion having been out to their parents for nine or more years and identifying as Catholic. Most respondents reported financial stability. While high levels of both perceived parental closeness and self-acceptance were observed, statistical analyses (ANOVA and correlational analysis) revealed no significant relationship between these variables, nor any significant differences when grouped by demographic factors. These findings challenge conventional assumptions about the primacy of parental closeness in fostering self-acceptance among the sexual minority individuals. The results suggest that other factors, including peer support and community involvement, may play a more influential role. These insights highlight the resilience of sexual minority students and underscore the importance of strengthening support systems beyond the family unit to promote self-acceptance.

Keywords: attachment, community involvement, family support, LGBTQ+, online spaces, parental closeness, peer support, self-acceptance, sexual minority students

STEHR-SR-10

DEATH ANXIETY AND LIFE SATISFACTION AMONG NON-TEACHING PERSONNEL IN A PRIVATE EDUCATIONAL INSTITUTION

Karizza M. Kitong, Lizette S. Sibayan, Katrina Mae S. Quimo, Adrian Philip R. Menguis, Princess Mariame S. Ambros, & Alfredo Julio A. Montoya

Death anxiety can be experienced by all individuals, even among unexpected populations, and life satisfaction plays a role in how strongly it is experienced. This study investigated the relationship between death anxiety and life satisfaction among non-teaching personnel, considering profile variables including age, sex, civil status, highest educational attainment, socioeconomic status, and years of working experience. The sample consisted of 96 individuals (42 males, 56 females; aged 23-57

years) selected using a purposive sampling method. Data was collected using demographic questionnaires, the Revised Collett-Lester Fear of Death Scale, and the Quality of Life Scale. Independent sample t-tests, one-way ANOVA, and Pearson's correlation were the statistical techniques employed for data analysis. The results indicated that the participants exhibited moderate levels of death anxiety, but no significant differences were found in terms of their profile variables, suggesting that the participants generally experience death anxiety similarly regardless of demographic characteristics. In terms of life satisfaction, the participants showed high to very high life satisfaction, indicating generally positive perceptions of their life circumstances. Significant differences in life satisfaction were observed in terms of age, highest educational attainment, and years of work experience. The correlational analysis revealed a low positive relationship between death anxiety and life satisfaction, which suggests that awareness of death does not necessarily diminish one's quality of life. Instead, it can encourage individuals to appreciate their existence more and pursue a more profound sense of purpose in life.

Keywords: adult workforce, employee satisfaction, fear of death, meaning in life, non-academic staff, office workers, school/college personnel (non-faculty)

STE-H-SR-11

PARENTAL VERBAL AGGRESSION AND CONFLICT-RESOLUTION STRATEGIES AMONG YOUNG ADULTS

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Jannah Faye P.Valdez, & Alona C. Costales*

Parental verbal aggression is a form of emotional maltreatment that may influence how individuals manage interpersonal conflicts. This study examined the relationship between parental verbal aggression and conflict-resolution strategies among young adults at a private higher education institution, using a quantitative, descriptive-comparative, and correlational design grounded in Social Learning Theory and the Thomas–Kilmann Conflict Mode Instrument (TKI) Model. Using proportionate stratified random sampling, 374 young adults aged 18–25 participated. Data was gathered using a demographic questionnaire, the Verbal Abuse Questionnaire (VAQ), and the Thomas–Kilmann Conflict Mode Instrument. Descriptive statistics determined levels of parental verbal aggression and preferred conflict-resolution strategies, while independent-samples t-tests, one-way ANOVA, and Pearson correlations analyzed differences and relationships. Findings showed varying levels of parental verbal aggression and diverse conflict-resolution strategies. No significant differences in parental verbal aggression were found across selected demographic variables. However, a significant relationship was observed between parental verbal aggression and collaborating strategies, indicating that parental communication patterns are associated with how young adults manage interpersonal conflicts. Overall, the results highlight the family as a critical socializing environment influencing communication and conflict-management behaviors. The study emphasizes fostering healthy parental communication and constructive conflict-resolution skills to support young adults' emotional well-being and interpersonal development.

Keywords: conflict-resolution strategies, family communication, parental verbal aggression, young adults

STEh-SR-12

**EXPLORING THE RELATIONSHIP BETWEEN PERCEIVED PARENTING
STYLE AND THE EXECUTIVE ACADEMIC FUNCTIONING OF
EMERGING ADULTS
IN A PRIVATE HIGHER EDUCATIONAL INSTITUTION**

*Hailey Bernadette C. Olarte, Misirah Angel C. Anghuban, Jasel Joy F. Go, Josh B.
Pugong, Jali Albert S. Taguiam, & Leslie Doris M. Divina*

Parenting style remains a significant factor influencing cognitive and academic development across the lifespan. This study examined the relationship between perceived parenting styles and the executive academic functioning of emerging adults enrolled in a private higher educational institution. The research focused on how parental warmth, hostility, rejection, neglect, and overprotection relate to students' executive academic skills such as planning, time management, self-regulation, and emotional control. To achieve the objectives of the study, a quantitative descriptive-comparative and correlational research design was employed. Data was gathered from 375 emerging adults aged 18–25 using standardized self-report instruments. Perceived parenting styles were measured using the Short Form Egná Minnen Beträffande Uppfostran (S-EMBU), while executive academic functioning was assessed using the Behavior Rating Inventory of Executive Function–Adult Version (BRIEF-A). The findings revealed no significant differences in perceived parenting styles and executive academic functioning when respondents were grouped according to selected demographic variables. Results however, indicated a significant relationship between perceived parenting styles and executive academic functioning. Parental warmth was associated with stronger executive academic skills, while hostility, rejection, neglect, and overprotection were linked to poorer executive functioning outcomes. The results highlight the enduring influence of parenting experiences during emerging adulthood and underscore the importance of supportive parenting practices in fostering academic self-regulation and cognitive functioning among college students.

Keywords: emerging adulthood, executive academic functioning, higher education, parental warmth, perceived parenting style

STEh-SR-13

**A CLOSER LOOK ON THE PARENTAL INVOLVEMENT AND
PSYCHOLOGICAL WELL-BEING OF COLLEGE STUDENTS**

*Mark Joshua T. De Guzman, Lireyn Joy B. Cabacungan, Myla P. Manuel,
Trisha Joy D. Paligan, & Alona C. Costales*

Parental involvement has been extensively studied in relation to the development and well-being of children and adolescents. This study provides a closer look at parental involvement and support during childhood and adolescence and their effects on the psychological well-being of adults. It demonstrates that high levels of parental warmth, emotional support, and engagement in a child's upbringing are associated with greater self-esteem, satisfaction, and psychological resilience in adulthood. Conversely, lack of parental involvement, neglect, or overly controlling parenting

styles are linked to higher rates of depression, anxiety, and other mental health issues in adult children. The mechanisms underlying these associations likely involve the development of secure attachment styles, effective emotion regulation skills, and a strong sense of self-worth instilled by positive parenting practices. Parental involvement may also provide a foundation of social support that continues to benefit adults as they navigate life's challenges. This study highlights parental engagement in adult psychological well-being. The findings underscore the critical importance of policies and programs that promote positive parenting to support long-term mental health outcomes for individuals.

Keywords: development, education, parenting, well-being

STEHR-SR-14

COGNITIVE CONTROL OF EMOTIONS: ITS INFLUENCE ON EATING PATTERNS AND BODY PERCEPTION

*Jamaica M. Claro, Irish Nicole Dela Cruz, Princess Mae R. Magday,
Wea Laika G. Que, & Alona C. Costales*

This study examined the influence of cognitive control of emotions on eating patterns and body perception among college students, based on Gross's process model of emotion regulation. Using a descriptive-comparative-correlational design, data was gathered from 373 undergraduate students. Results showed that participants generally demonstrated neutral levels of cognitive control, moderate eating behaviors, and body perception within the "no concern" range. Findings revealed no significant differences across most demographic variables, indicating that emotional regulation and eating patterns remain stable regardless of sex, year level, academic discipline, socioeconomic status, and BMI. However, females exhibited significantly higher uncontrolled eating, while socioeconomic status influenced emotional eating and body perception. BMI was significantly associated with body perception but not with emotional regulation or eating behaviors. Correlation analysis showed strong relationships between emotional and uncontrolled eating, and moderate associations between body dissatisfaction and maladaptive eating. While cognitive control strategies were related to each other, they showed negligible direct relationships with eating patterns and body perception. Overall, emotional regulation appears independent, whereas eating behaviors are closely linked to emotional distress and body image concerns, emphasizing the need for emotion-focused wellness interventions.

Keywords: body perception, cognitive control of emotions, cognitive reappraisal, eating patterns, college students, emotional eating, emotion regulation strategies, expressive suppression, uncontrolled eating behavior, mental health

STEHR-SR-15

MENTAL HEALTH LITERACY OF PARENTS: BASIS FOR MENTAL HEALTH INFORMATION DISSEMINATION

Barry Christian C. Valeros, Bryan James S. Arboleda, Micah J M. Galvan, Rhegie Claire M. Pulintino, Chloe Joiz S. Sagaysay, & Reiner B. Dulawan

This study assessed the level of mental health literacy (MHL) among parents in the general vicinity of Bayombong, Nueva Vizcaya, emphasizing the importance of

understanding their knowledge and beliefs about their children's mental health and addressing gaps in the existing literature, where MHL is often measured but seldom improved through interventions. A total of 267 parents participated in this descriptive survey, with data collected using the Mental Health Literacy Scale (MHLS) developed by O'Connor and Casey (2014) and translated into Filipino using the Mental Health Literacy Scale - Filipino Version created by Biscocho and Medina in 2022. Results were analyzed through descriptive and inferential statistics. The findings revealed that parents demonstrated a moderate level of mental health literacy, indicating general awareness but limited ability to recognize specific mental health disorders and appropriate interventions, with significant differences observed across selected demographic variables. Overall, the study concludes that while parents possess an adequate level of mental health literacy, there remains a need for more comprehensive and strengthened mental health information dissemination efforts to enhance awareness, reduce stigma and misconceptions, and promote help-seeking behaviors among parents and families.

Keywords: knowledge and beliefs, mental health awareness, parents, stigma

STEh-SR-16

COLLEGE STUDENTS' STRATEGIES IN DISAGREEING

*Editha A. Agbayni, Ma. Princess Josephine P. Cuaño, Rikki Mae B. Culhi,
& Vince Errol J. Lucas*

Disagreements are common in academic settings and are often managed through linguistic strategies that balance clarity and politeness. This study explored the disagreement strategies employed by college students at Saint Mary's University across relationships with differing social relations: higher, equal, and lower status. It identified which strategies, based on Brown and Levinson's (1987) Politeness Theory, students used and whether gender, age, and dominant language influenced their choices. Using a qualitative descriptive design, 60 students from four schools in Saint Mary's University completed a Discourse Completion Test (DCT), and responses were coded into positive politeness, negative politeness, bald-on-record, and off-record strategies with subtypes. Results showed that negative politeness was most employed, especially with higher-status interlocutors, while bald-on-record strategies were common in peer or lower-status contexts. Many responses combined strategies, reflecting nuanced awareness of context and relationships. The findings highlight the importance of socially sensitive pragmatic instruction tailored to status, gender, age, and language background.

Keywords: college students, disagreement strategies, pragmatic competence
politeness theory, social status