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SUSTAINABLE DEVELOPMENT OF COASTAL AREA RESOURCE BASED ON LOCAL WISDOM

**“The Role of Higher Education in Creating
The Golden Generation on 2045”**



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PT. PENA PERSADA KERTA UTAMA

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ABSTRACT PROCEEDING

PROCEEDING OF THE INTERNATIONAL CONFERENCE
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Sustainable Development of Coastal Area Resource Based on Local Wisdom

**“The Role Of Higher Education In Creating The
Golden Generation On 2045”**



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Welcome Speech



UNIVERSITY OF SEMBILANBELAS NOVEMBER KOLAKA
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Welcome to University of Sembilanbelas November Kolaka (USN Kolaka), a place for creating new generation with excellent knowledge and good behaviour.

As one of the new satara universities in Indonesia, USN Kolaka strives to facilitate young people from across the country and beyond to become the best version of themselves and reach their full potential. We aim to equip our thriving and vibrant community with quality education and everything essential in their quest to create a better tomorrow.

Our university was being grow up since 2014. We have 6 faculty and 30 study programs that will help students broaden their horizons and enrich their experiences in research, interdisciplinary collaboration, and life in general. We have an extensive partnership network with national educational institutions, research institutes, government agencies, niche industry, working closely on education, knowledge exchange, and more. Today, we have try to make an international collaboration with university on several country.

Situated at the Kolaka City, a city widely known for its Nicker and cultural heritage, our campus offers a rich energy resource for green and sustainable energy, intercultural experience, that everyone from everywhere can enjoy. Here, we invite you to a diverse and inclusive learning environment where we can work hand in hand and make real impacts.

Thank you for join us. I wish you all an enjoyable time at USN Kolaka



Dr. H. Nur. Ihsan HI, M.Hum

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USN B I S A

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**SUSTAINABLE DEVELOPMENT OF
COASTAL AREA RESOURCE BASED ON
LOCAL WISDOM**

**“The Role of Higher Education in Creating
The Golden Generation on 2045”**

Preface

The proceedings of the International Conference on Sustainable Development of Coastal Area Resource Based on Local Wisdom with theme about “The Role Of Higher Education In Creating The Golden Generation on 2045” 2023 is a compilation of the papers presented at the conference held in Kolaka, Southeast Sulawesi, Indonesia, 10-11 October 2023. The conference has brought together a variety of professionals and researchers in the field of natural sciences and technology, food security and health, green energy and marine sciences, human resource development, and social sciences and humanities e.g. researchers, lecturers, practitioners, and students. This book contains keynote speeches, plenary sessions and research presentations.

We expect the proceedings will contribute to research and development in learning, the disseminating of new findings in sciences and to stimulate networking within practice, research and education.

ICUSN 2023 Committee

Keynote Speakers

Opening Speech by the Minister of Energy and Mineral Resources, Republic of Indonesia



MINISTRY OF ENERGY AND MINERAL RESOURCES
THE REPUBLIC OF INDONESIA

THE ROLE OF HIGHER EDUCATION IN CREATING THE GOLDEN GENERATION IN 2045

Kufala | October 10th 2021

#EnergyTransition

INDONESIA 2024: Sovereign, Advance, Just, and Prosperous Nation

Indonesian people are superior, cultured and have mastered science and technology

A developed and sustainable economy

Equal and inclusive development

A democratic, strong and clean state

4 Pillars of Indonesian Development 2045



IMPACT OF CLIMATE CHANGE

Indonesia is an archipelagic country that is vulnerable to the impacts of climate change



Indonesia experiences sea level rise of 0.6-1.7 cm/year, while around 65% of the population lives in coastal areas.

Source: IPCC AR5

Climate Change Risks

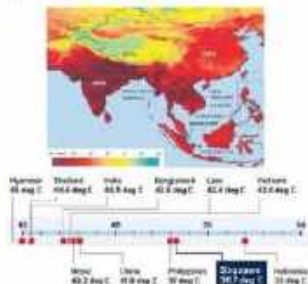
- Water scarcity
- Damage to land ecosystems
- Damage to marine ecosystems
- Decreased quality of health
- Food security

Source: IPCC AR5

Climate change can increase the risk of hydro-meteorological disasters, which currently account for 80% of total disasters in Indonesia.

Indonesia's potential economic losses could reach 0.60%-3.45% of GDP in 2030.

Source: Bank Dunia/ADB (2019)



Source: IPCC AR5. Air temperature from the global climate model projection system, HadCM3.2.3.0. (Source: IPCC AR5 Working Group II Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change)

INDONESIA'S ENERGY SECTOR ROADMAP TOWARDS NET ZERO EMISSION 2060

Energy Sector Roadmap for NZE 2060 or earlier

2019-2025

Policy: AEC Development based on RUFR, 2019-2030, and 10-year master plan.

Demand: Indonesia, 2020, gas network, 2020, 2025, master plan.

Supply: Gas, Hydrogen, Biomass, Coal to 2025, for transportation sector 2020-2030.

Demand: Indonesia, 2020, gas network, 2020, 2025, master plan, 2030, 2035, master plan, 2040, 2045, master plan.

Policy: AEC Development based on RUFR, 2021-2030, and 10-year master plan by 2025.

Demand: Indonesia, 2020, gas network, 2020, 2025, master plan, 2030, 2035, master plan, 2040, 2045, master plan.

Policy: AEC Development based on RUFR, 2021-2030, and 10-year master plan by 2025.

Demand: Indonesia, 2020, gas network, 2020, 2025, master plan, 2030, 2035, master plan, 2040, 2045, master plan.

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Demand: Indonesia, 2020, gas network, 2020, 2025, master plan, 2030, 2035, master plan, 2040, 2045, master plan.

NZE Power Plant Development Roadmap

2019 PP Installed Capacity in 2019: 708,000 MW. 2021-2025: 1,000,000 MW. 2026-2030: 1,500,000 MW. 2031-2035: 2,000,000 MW. 2036-2040: 2,500,000 MW. 2041-2045: 3,000,000 MW. 2046-2050: 3,500,000 MW. 2051-2055: 4,000,000 MW. 2056-2060: 4,500,000 MW.

Demand: Indonesia, 2020, gas network, 2020, 2025, master plan, 2030, 2035, master plan, 2040, 2045, master plan.

Policy: AEC Development based on RUFR, 2021-2030, and 10-year master plan by 2025.

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Demand: Indonesia, 2020, gas network, 2020, 2025, master plan, 2030, 2035, master plan, 2040, 2045, master plan.

SUPER GRID

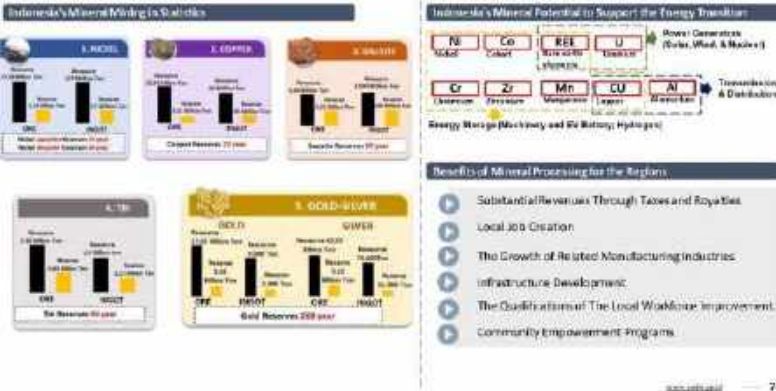
Super grid is a key factor in achieving zero emission in the electricity generation sector



THE ROLE OF FOSSIL ENERGY IN THE ENERGY TRANSITION

	Oil and Gas	Coal and Minerals
Role s	<ol style="list-style-type: none"> Oil currently is the main energy in the transportation sector Natural gas used as energy transition before 100% of REE-PP applied Natural gas used as fuel for intermittent renewable energy Fulfillment of domestic needs (i.e. fuel for transportation, residential, industry and households) 	<ol style="list-style-type: none"> Fulfilling domestic needs (i.e. fuel for power plants, industry and households) before a cleaner alternative energy available. Minerals such as nickel, cobalt, are the main material source for the manufacture of batteries.
Issue s	<ol style="list-style-type: none"> Increase in oil production by 1 million bopd and natural gas by 1.2 bcf by 2030. Produce carbon emissions 	<ol style="list-style-type: none"> Carbon emissions contributor Environmental issues – if not managed with good mining practices Cell battery industry readiness
Strategie s	<ol style="list-style-type: none"> Increasing Reserves through: <ul style="list-style-type: none"> Optimization of existing field production Transformation of Reserves to Production Accelerate Chemical EOR Maximize exploration for big discoveries Natural gas as energy transition before 100% of REE-PP applied Application of CCS/CCUS 	<ol style="list-style-type: none"> Reducing the use of coal as a source of energy for PP or the use of coal in coal PP by using CCS/CCUS The use of coal in households through the development of Dimethyl Ether (DME). Increasing the added value of minerals through processing and refining for domestic metal mineral mining commodities. Integrated battery industry development

THE ROLE OF MINERALS IN ENERGY TRANSITIONS



POTENTIAL OF NRE AND MINERALS RESOURCES IN SOUTH EAST SULAWESI

POTENTIAL OF NRE RESOURCES



POTENTIAL OF MINERALS RESOURCES (Ton)

NICKEL



RESOURCES

Ore: 6,324,041,776
 Metal: 70,847,684

RESERVE

Ore: 2,104,815,18
 Metal: 22,287,049

Iron Laterite



RESOURCES

Ore: 1,602,774,714
 Metal: 315,521,941

RESERVE

Ore: 218,063,368
 Metal: 37,961,574

GOLD



RESOURCES

Ore: 3,085,712
 Metal: 10

RESERVE

Ore: 982,246
 Metal: 2.46

ACADEMIC SUPPORT IN HUMAN RESOURCES DEVELOPMENT IN THE ERA OF ENERGY TRANSITION

THE ROLE OF ACADEMICS IN THE PEN/DAHELIK ECOSYSTEM

- Encouraging technological innovations
- Providing comprehensive learning facilities
- Increasing quality human resources and encouraging technology transfer
- Expanding energy transition information and culture to the community



Academic synergy is needed to optimize the implementation of NRE in all aspects of its development

Research & Development

- Studies and research related to the use of new, renewable energy and energy conservation (EBTKE)
- Commercialization and upsizing for research in the EBTKE subsector

Implementation

- Utilization of EBT in the Campus Environment
- Energy conservation and efficiency applications
- Implementation of EBTKE in villages or communities

Study

- Human resource development through courses in the field of EBTKE, etc.
- Provision of supporting facilities in the EBTKE sector
- EBTKE certification

Socialization / Dissemination

- Positive EBTKE campaign in the community
- Participate in disseminating EBTKE technical facts to the public

Thank You

Ikuti kami di akun media sosial:

- @bwinke
- KemendiknasESDV
- @kementerianESDV
- KemendiknasESDV



Development Of Microwave Energy Application Technologies For A Sustainable Development-Oriented Society: Initiatives At The University Of Fukui

U.F. Education
The Power of Growth with Learning

UNIVERSITY OF
FUKUI

**DEVELOPMENT OF MICROWAVE ENERGY APPLICATION TECHNOLOGIES
FOR A SUSTAINABLE DEVELOPMENT-ORIENTED SOCIETY
- INITIATIVES AT THE UNIVERSITY OF FUKUI -**

Seitaro Mitsudo

Department of Applied Physics, Faculty of Engineering University of Fukui
mitsudo@u-fukui.ac.jp

INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT OF
COASTAL AREA RESOURCES BASED ON LOCAL WISDOM
2023.10.16 - Suran Raja Hotel, Mattha, Southeast Sulawesi, Indonesia

1

We look forward to a better future academic and educational exchange between the USN Kolaka and the University of Fukui !





Collaborators

Department of Applied Physics,
 Research Center for Development of
 Far-Infrared Region
 University of Fukui, Japan

Prof. Dr Seitaro Mitsudo
Prof. Dr Takayuki Asano
Prof. Dr Hikomitsu Kikuchi
Asoc. Prof. Dr Toyohiko Nishiumi
Asist. Prof. Dr Fumihiko Nishimura
Asoc. Prof. Dr Yutaka Fujii
Asist. Prof. Dr Yuya Ishikawa

Postdoctoral Researcher
Kohel Nakagawa

Doctor course
Al Jalali Muhammad
I Patu Abdi Karya

Department of Physics, Faculty of
 Mathematics and Natural Sciences,
 HaluOlea University, Indonesia

Asoc. Prof. Dr La Agusu
Asoc. Prof. Dr I Nyoman Sudiana
Lect. Al Jalali Muhammad





Contents

Microwave energy application technologies for a sustainable development-oriented society

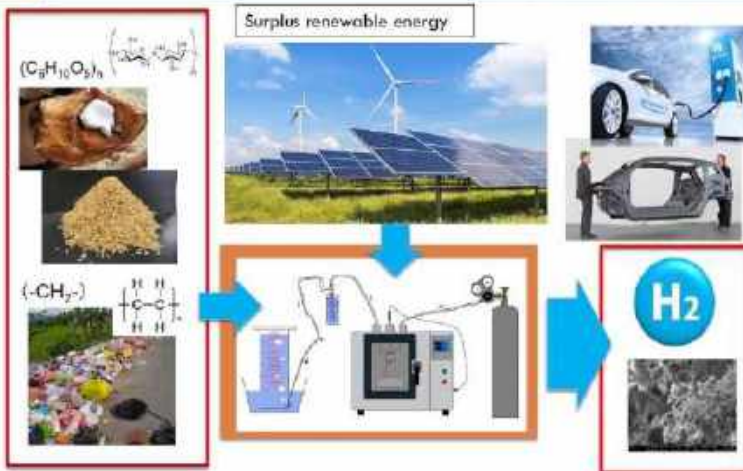
- ❑ Problem of **plastic waste**
- ❑ Roasting-leaching Assisted Microwave Irradiation for **Nickel Extraction**
- ❑ Eco-Friendly **Microwave Extraction and Drying**
- ❑ Dye-Sensitized **Solar Cell (DSSC)**
- ❑ Measurement of the **quantum state**
- ❑ **Sustainable material** research

Problem of plastic waste

Plastic products are indispensable products in modern life. However, plastic waste continues to increase and has become a major social problem. The problem of marine plastics is particularly serious. According to a report by the Organization for Economic Co-operation and Development (OECD), the amount of plastic waste discharged worldwide in 2060 will reach 1.014 billion tons, three times that of 2019, and the amount of plastic in the ocean is said to exceed the amount of fish.



Research to create new energy and materials from renewable energy and waste



Related presentations

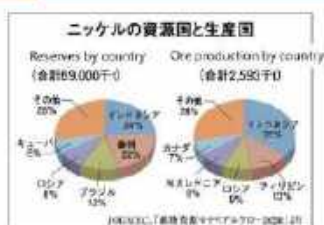
Biomass Waste into Hydrogen and CNTs for Sustainable Renewable Energy by Microwave Irradiation

Kohei Nakagawa¹, I Putu Abdi Karya¹, Al Jalali Muhammad¹, Yota Kageyama², Takayuki Asano², Toyohiko Nishiumi², Fumihiko Nishimura³, Yoshinori Tatematsu¹, Seitaro Mitsudo³

Plastic Waste into Hydrogen (H₂) and CNTs for Sustainable Renewable Energy by Microwave Irradiation

I Putu Abdi Karya¹, Kohei Nakagawa¹, Yota Kageyama², Al Jalali Muhammad¹, Takayuki Asano², Fumihiko Nishimura³, Toyohiko Nishiumi², Yoshinori Tatematsu¹ and Seitaro Mitsudo³

Microwave refining and recycling of rare metals (nickel)



<https://nickelinsto.net/en/about-nickel-and-its-applications/>

Electrification of automobiles is progressing to achieve carbon neutrality. This requires a large number of batteries, and the demand for nickel as a battery material is increasing exponentially.

However, these batteries also need to be products with a low environmental impact.

Indonesian Nikkel

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Roasting-leaching Assisted Microwave Irradiation for Nickel Extraction-Hydro Metallurgy-

12



The maximum results were obtained in the application of microwave 640 W (DR80%) for 30 minutes with a nickel content that was successfully extracted by 94.7%. By using the microwave heating, it is possible to extract the same amount of nickel in one quarter of the time compared to using the conventional heating.

Related presentations

13

Roasting-leaching Assisted Microwave Irradiation for Nickel Extraction

Al Jalali Muhammad, Kohei Nakagawa¹, I Putu Abdi Karya¹, Aslan Ndita², Sulhajib²,
La Ode Muhammad Darusman², I Nyoman Sudiana², L. Agus², Fumihiko Nishimura³,
Toyohiko Nishimura⁴, Takayuki Asano⁴, Hikomitsu Kikuchi¹ and Seitaro Mitsudo⁴

Study on Cobalt Deposit Indicator Deducted from the Big Data of Nickel Laterite Ores in Southeast Sulawesi Area

La Agus¹, La Ode Saliudin², La Ode M. Darusman³, Rosliana Eso², Al Jalali Muhammad⁴,
I Putu Abdi Karya⁴, Kohei Nakagawa⁴, Takayuki Asano⁵, Fumihiko Nishimura⁶, Yutaka
Fuji⁴, and Seitaro Mitsudo⁵

Eco-Friendly Microwave Extraction and Drying

14

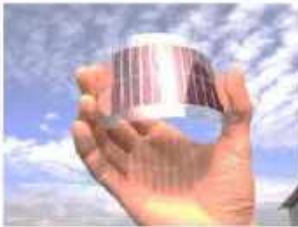


Characterization of Cypress Essential Oil Extracted by Eco-friendly Microwave Vacuum Distillation Method

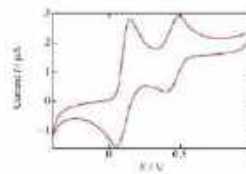
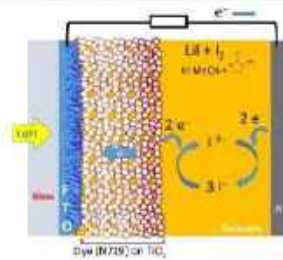
Mila Tsuruo¹, Kohei Nakagawa², Yuyun Sulastri¹, Yuto Inui¹, Yosuo Hasegawa³,
I Putu Abdi Karya², Takayuki Asano¹, Toyohiko Nishimura¹, and Seitaro Mitsudo¹

Dye-Sensitized Solar Cell (DSSC)

15



Electrochemical Measurement



Related presentations

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The Acceleration of Ion Conductivity without Supporting Electrolyte in Iodine-Iodide Redox Reaction

Toyohiko Nishiumi^{1*}, Yuka Sendu

Voltammetric detection of ozone-dissolved water at a TiO₂-coated FTO electrode

Takuro Hirano¹, Toyohiko Nishiumi^{1*}

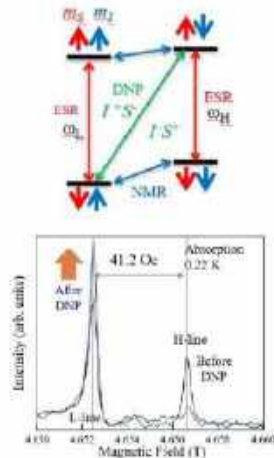
Charge-transfer and Mass-transport Mechanisms in the Iodine-Iodide Redox Reaction in Aqueous Solution

Ryuto Arai², Toyohiko Nishiumi^{1*}

Measurement of the quantum state by using electromagnetic waves in the terahertz wave region

17

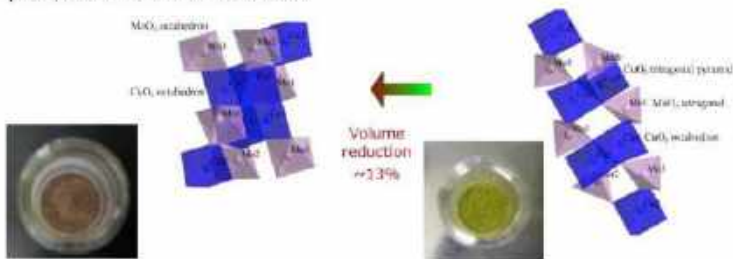
Quantum information processing is also attracting attention as one of the science and technology innovations for achieving the SDGs, for example, solving optimization problems by quantum computation (QC). We are also engaged in basic research to measure the quantum state of individual spins by magnetic resonance using electromagnetic waves in the terahertz wave region, which can be attributed to the development of quantum computers.



Sustainable material research

18

- **Chromism:** The color of a material changes reversibly upon some external stimulus; temperature and pressure, light, solvent, and presence of ions and electrons.



- ✓ Chromic phenomena of CuMoO_4 provide valuable information about temperature and pressure without any external energy sup.
- ⇒ Chromic material is a candidate for sustainable materials.

Related presentations

19

Development of cryogenic and high-frequency magnetic resonance apparatus

Yuya Ishikawa1)*, Kanata Hayashi1), Hideyuki Takahashi2,3), Akira Fukuda4), Kohei Hirozawa1), Takero Ito1), Seitaro Mitsudo5), Takayuki Asano5), Hikomitsu Kikuchi1), Yoshinori Tatematsu1), Sergey Vasiliev6), Eiji Ohmichi7), Hitoshi Ohta2,7) and Yutaka Fujii1

Magnetic Properties of Sustainable Chromic Material CuMoO_4

Takayuki Asano1)*, Takuma Iwamoto1, Al Jalali Muhammad2, I Putu Abdi Karya2, Kohei Nakagawa2, Toyohiko Nishitani1, Seitaro Mitsudo1, Yasuo Narumi3, and Masayuki Hagiwara3

Conclusion

20

Microwave energy application technologies for a sustainable development-oriented society

1. Problem of **plastic waste**
2. Roasting-leaching Assisted Microwave Irradiation for **Nickel Extraction**
3. Eco-Friendly **Microwave Extraction and Drying**
4. Dye-Sensitized **Solar Cell (DSSC)**
5. Measurement of the **quantum state**
6. **Sustainable material** research

Nine related presentations are planned. Please listen to each presentation for details!

The Challenge of Sustainable Development: Local Wisdom Approach



INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT OF QUALITY AREA RESEARCH
AND "The Role of Higher Education in Realizing the Deklarasi 2045"



The Challenge of Sustainable Development: Local Wisdom Approach



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INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT OF QUALITY AREA RESEARCH BASED ON LOCAL WISDOM



Outline

- SDGs
- Current situation of SDGs in SEA
- Thailand's perspectives and approach
- SEP + SDGs + BCG approach for Thailand

SDGs (Sustainable Development Goals)

- In 2015, the United Nations (UN) 2030 Agenda for Sustainable Development is a universal call to action to end poverty, protect the planet, and improve the lives and prospects of everyone, everywhere.
- The United Nations 2030 Agenda for Sustainable Development is a global aspirational roadmap towards achieving a **sustainable future for all**.

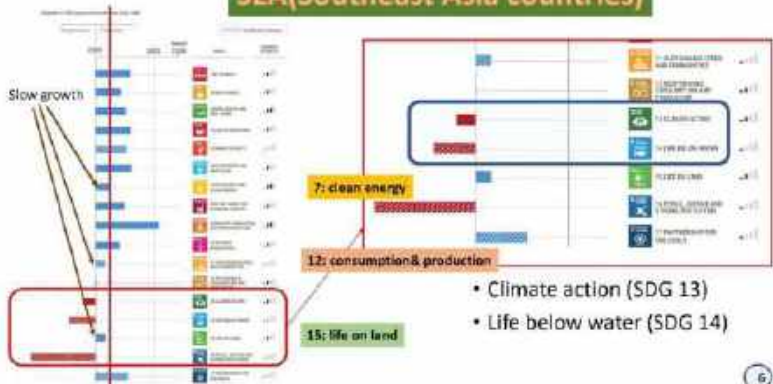
Current status of SDGs in ASEAN countries



Effect from COVID-19 pandemic on SDGs?



SEA (Southeast Asia countries)



SDGs



Marine Pollution

Marine Pollution



Source: UNESCO, 2022

- Plastic waste makes up 80% of all marine pollution and around 8 to 10 million metric tons of plastic end up in the ocean each year.
- Research states that, by 2050, plastic will likely outweigh all fish in the sea.



R.I.P – Dugong (Mariem)



Climate Change

Southeast Asia facing calamitous weather extremes as 1.5°C global warming to hit by 2030s: IPCC report

IPCC's report found that human activity was "unequivocally" to blame for increasingly harsh climate events.



Heatwaves



Floods



Drought

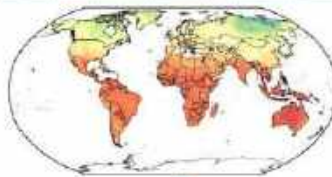
COP26/27

Indonesia, plans to achieve net-zero by 2060
Thailand set a goal to be net-zero by 2065

Net zero GHG (Green House Gas) emission

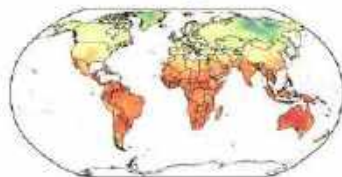


2015-2020



Temperature 25

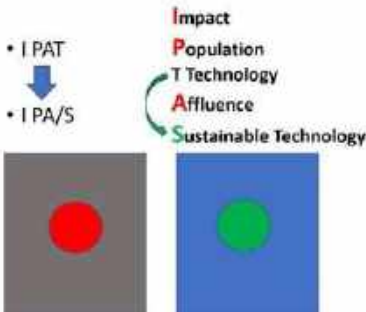
2091-2100



Temperature 40

How to do?

- Mitigation measures
- Adaptation measure



• It warns of a future of increasingly extreme heatwaves, droughts, fires and flooding.

• But it also shows how the worst impacts can be avoided if the world acts fast to cut greenhouse gas emissions.

Thailand approach

BCG





SEP(Sufficiency Economy Philosophy)

- The country has been guided by the Sufficiency Economy Philosophy (SEP), conceived by His Majesty the Late King Bhumibol Adulyadej.
- SEP has been adopted as the core principle of the National Economic and Social Development Plan since 2002.
- The current constitution has integrated SEP and sustainable development as integral parts.



Sustainable university

Mitigation and adaptation for change

Distribution of SEP project in many countries

Model I : SEP Study Centres

Model I

SEP Study Centre : Tonga



21

SEP Study Centre : Lesotho



Mr. Bokara Petse Cyprianus, a young accountant who has applied knowledge gained from the SEP Study Centre in Lesotho to his farming.



22

SEP Study Centre : Lao PDR



23

Model II : SEP Model Villages



Model II

"Self-reliance" SEP Model Village in Koh Kong Province, Cambodia

SEP Model Villages in Timor-Leste (bilateral and trilateral projects)

SEP Model Village in Chile (self-applied by TIGA alumni of SEP course)

SEP Model Village : Timor-Leste



SEP Model Village : Solomon Islands



<https://mahidol.ac.th/>

<https://www.tm.mahidol.ac.th/eng/index-eng.php>



Mahidol University



Welcome to join and participate the in coming conference

37

Thank you for your attention!



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Greening TVET and Future Skills for Sustainable Development: The role of Higher Education in Malaysia





ABOUT ME

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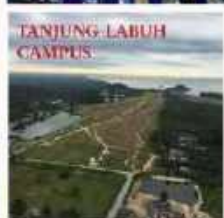
Phone: +603-63212121

“Pengaruh Allah SWT sangat besar dalam kehidupan saya. Saya bersyukur kepada Allah SWT kerana telah memberikan saya ilmu, kesehatan, rezeki dan keluarga yang bahagia.”

Prof. Dr. Razali Bin Hassan

Biography

- Professor at Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia.
- Former Director of Malaysia Research Institute in Vocational Education and Training (MRIVET)
- Former Dean Faculty of Technical and Vocational Education
- Former Head of Engineering Education Department
- Members of Technologies Expert (T) Malaysia Board of Technologies (MBOT)
- Senior members of RAVTE and KECOPVET
- Members of National Union of Teachers Profession
- Consultant for Middle east Project Jordan, Yaman, Arab Saudi
- Consultant for various project related to IR4.0, TVET-Quality and TVET Teachers Standard
- Trainer for TVET Competency Based Training
- Chairman in Koperasi UTHM Berhad
- National members for TVET Committee
- National members for Taskforce on TVET Direction for Vocational College in Malaysia
- Members of SEA TVET Society
- Members of AASIVET
- Honorary Secretary of ASIA TVET EXPERT NETWORK (AIVEN)



MALAYSIA TECHNICAL UNIVERSITY NETWORK



MASTER OF MECHANICAL ENGINEERING (MDM) - COURSEWORK

Uthm

DOCTOR PEMBINAAN SAINS DAN TEKNOLOGI

Uthm

POSTGRADUATE PROGRAMME

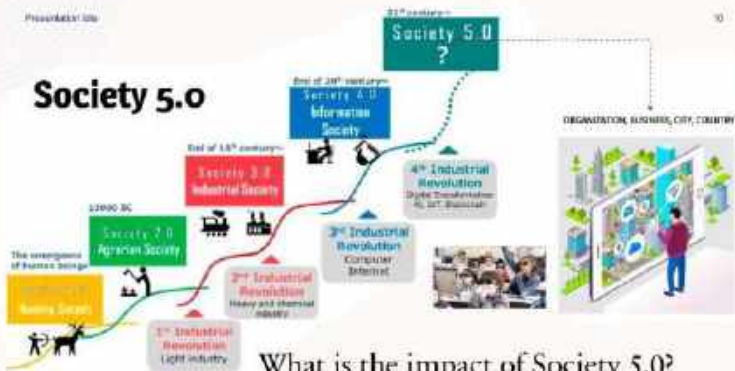
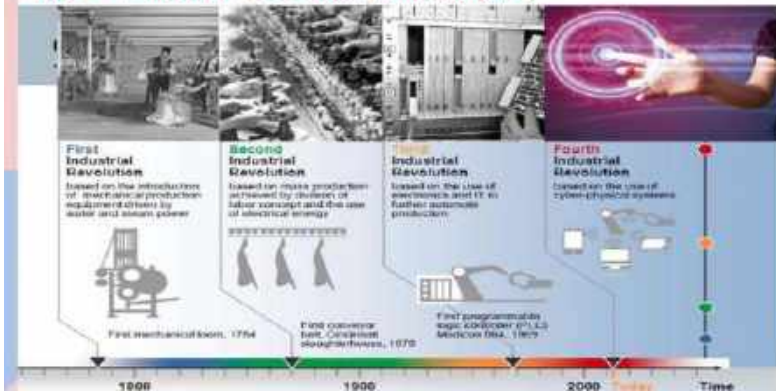
Uthm

TECHNOLOGY CHANGE THE WORK PROCESS?

Change the work flow, work procedure, new skill sets, change attitude, behaviour, perception and etc



The 4th Industrial Revolution/ Industry 4.0



What is the impact of Society 5.0?

SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD

1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS	SUSTAINABLE DEVELOPMENT GOALS

THREE COMPONENT FOR SUSTAINABLE DEVELOPMENT



DEFINITIONS

GREEN TVET



- Greening TVET is a normative process of change that requires approaches that are clear, holistic, systematic and methodical.

FUTURE SKILLS



- definition: Future Skills are competences that allow individuals to solve complex problems in highly emergent contexts of action in a self-organised way and enable them to act (successfully).

SUSTAINABLE DEVELOPMENT



- Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

GREENING TVET

- Greening TVET is an essential and cross-cutting theme for sustainable development. It refers to the efforts to reorient and reinforce existing TVET institutions and policies in order to reinforce achievement of sustainable development. Thus, greening TVET acknowledges the relationship between sustainable development and green development and clarifies different definitions of green jobs and green skills as well.

What is Green TVET?



- Green TVET encompasses an employment education and training system in the workplace and further training that address environmental, economic and social sustainability, while ensuring the needs of individuals and institutions.
- Green TVET prepares people for green jobs that contribute to providing a secure quality of life, employment, wider employment income and living standards.

Why Invest in Green TVET?

www.futurekills.gov.uk www.greentvet.org.uk

Why Invest in Green TVET?

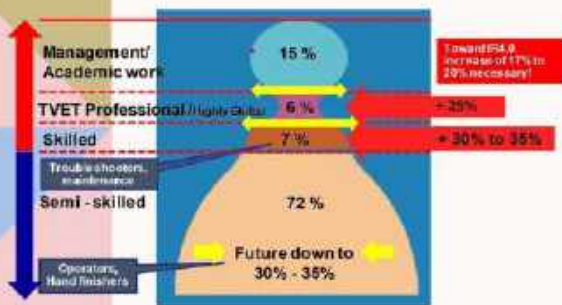


- Because Green TVET helps individuals to meet their own needs and needs of others.
- Because national governments need to take the potential for job creation by providing skills needed to meet green jobs.
- Because stakeholders need to improve the labour market skills, services, systems, skills, standards, cost effectiveness, and other indicators, primary income targeted support to develop knowledge and skills for green jobs.

WHY FUTURE SKILLS

- Future competencies are important for increasing your **prospects for success**. As artificial intelligence (AI) and digital technologies prompt new occupations and roles, future-oriented skills can improve your professional prospects. Various professionals can develop and enhance these skills to improve their performance. Future competencies can also help you:
 - become more adaptable
 - improve teamwork skills
 - embrace new environments and career changes
 - be successful in various settings
 - open opportunities for advancement
 - increase your employability
 - complement artificial learning and automation systems
 - be successful in a digital world

RESHAPING NEW TREND IN HUMAN CAPITAL DEVELOPMENT TOWARD IR4.0 AND FUTURE TECHNOLOGY



WHAT DO YOU THINK?



TREND FUTURE WORKING SKILLS IN HUMAN CAPITAL DEVELOPMENT

Date: we are supporting through this initiative

11 KEMENTERIAN		640 INSTITUSI TVET AWAM	22 INSTITUSI TVET KEMAJLIRAN NEGERI	633 INSTITUSI TVET SWASTA
KEMENTERIAN PENDIDIKAN MALAYSIA Kementerian Pendidikan (KEMENDIK) 87	KEMENTERIAN KEMAJLIRAN MALAYSIA KEMASCI 274	KEMENTERIAN PERKAMPARAN MALAYSIA KEMPERMA 33	KEMENTERIAN PERKAWANAN MALAYSIA KEMPERMA 3	INSTITUSI KEMAJLIRAN MALAYSIA KEMAJLIRAN 633
KEMENTERIAN PENJAJARAN KEMENPEN 144	KEMENTERIAN TEKNOLOGI DIGITAL KEMENDIG 274	KEMENTERIAN PERTANIAN DAN NEKADAM KEMPERTAN 22	KEMENTERIAN PERKAWANAN NEGERI KEMPERMA 48	INSTITUSI KEMAJLIRAN NEGERI KEMAJLIRAN NEGERI 633
KEMENTERIAN PERUSAHAAN KEMENTERIAN PERUSAHAAN MALAYSIA (KEMENTERIAN PERUSAHAAN) 11	KEMENTERIAN PERUSAHAAN NEGERI KEMENTERIAN PERUSAHAAN NEGERI 274	KEMENTERIAN PERUSAHAAN NEGERI KEMENTERIAN PERUSAHAAN NEGERI 15	KEMENTERIAN PERUSAHAAN NEGERI KEMENTERIAN PERUSAHAAN NEGERI 2	KEMENTERIAN PERUSAHAAN NEGERI KEMENTERIAN PERUSAHAAN NEGERI 633
1295 Institusi				

Augmented Reality Project

Presented by

INITIATIVES TOWARDS SUSTAINABLE DEVELOPMENT

WELCOME to SCO

Sustainable Campus Office UTHM

PLANETEERS

UTHM
Universiti Teknologi Malaysia

GREEN CAMPUS

UTHM

SAVE ENERGY

Saving Energy

Presented by

GREEN MANAGEMENT

26

UTHM
Universiti Teknologi Malaysia

Let's Recycle!!

We accept and buy recyclable stuffs

UTHM
PUSAT KITAR SEMULA
RECYCLING COLLECTION CENTRE

Rumah Pembelajaran Pemulihan Sumber (RPPS)

Sustainable Campus Office

SCAN ME

Block A20 near UTHM Stadium

www.sco.uthm.edu.my

www.uthm.edu.my

www.greening.sustainability



CONCLUSION

- It is important for governments, educational institutions, and industries to collaborate in designing and implementing comprehensive **Green TVET** programs that prioritize **sustainable development** and **future skills**. This requires investment in infrastructure, faculty training, and industry partnerships to provide hands-on learning experiences and exposure to emerging technologies. Additionally, continuous monitoring and evaluation of these programs are essential to ensure their effectiveness and relevance in meeting the evolving demands of the labor market and the environment.
- By embracing Green TVET and fostering future skills, we can create a workforce that is not only capable of driving technological innovation but also committed to environmental stewardship. This convergence of sustainability and technology will pave the way for a greener, more prosperous, and sustainable future for generations to come.

“Indeed, Allah will not change the condition of a people until they change what is in themselves.”

[Quran: Surah Ar-ra'd 13: Ayah 11]

Microwave Applications in Material Processing at University of Halu Oleo





Universitas Halu Oleo (UHO) is a member of the Universitas Indonesia (UI) Group of Universities based on Local National
 and International Recognition under Recognition Number: 001/1/1000/2017



MICROWAVE APPLICATIONS IN MATERIAL PROCESSING AT UNIVERSITY OF HALU OLEO

I Nyoman Sudiana
Department of Physics
University of Halu Oleo, KEMBARA

MICROWAVE



The distance from one crest to the next is the wavelength. The number of waves that pass a point in a second is the frequency.



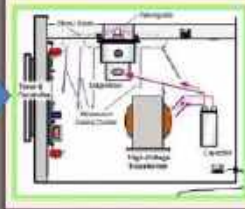
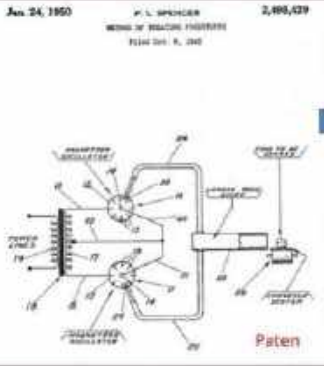
Radio	Infrared	Visible	Ultraviolet	X-ray	Gamma ray
3000 kHz - 300 GHz	300 GHz - 400 THz	400 THz - 800 THz	800 THz - 10 ¹⁶ THz	10 ¹⁶ THz - 10 ²⁰ THz	> 10 ²⁰ THz



(a) Electric field (b) Magnetic field (c) Microwave radiation

Frequency : 0.3-300 GHz
Wavelength : 1- 1000 millimeter

First Microwave heating



P.L SPENCER

<http://www.spencerfoods.com/normal-44600-press-001>

MICROWAVE SYSTEM



UNIVERSITAS HALU OLEO



MICROWAVE SYSTEM



PARTNER UNIVERSITY
(UNIVERSITY OF FUKU, JAPAN)

(Microwave, 2.45 GHz)



(Gyration, 300 GHz)



(Gyration, 20 GHz)

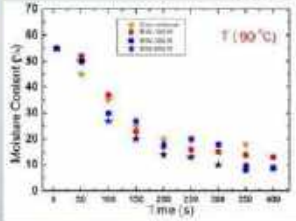


(pReactor, 0.45 GHz)



P.A. Ely, et al, 2009

APPLICATIONS ON MATERIAL PROCESSING

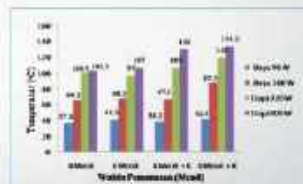
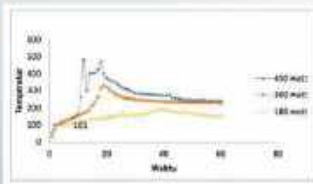


Drying Agriculture Commodities : Cocos Bean



Degradation of sawdust cellulose into glucose

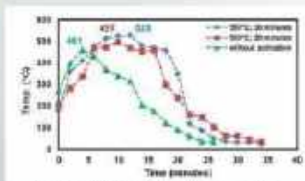
APPLICATIONS ON MATERIAL PROCESSING



GC CHROMATOGRAPHY TESTING RESULTS OF MICROWAVE HEATING PALM OIL

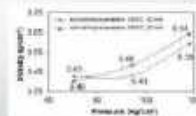
As you saw microwave power, the compounds are mixture, saturated, unsaturated and group of alcohols which are generally composed of saturated and perfumes. As you heats and also water, the dominant compounds are Methylglyoxal, Acetic acid, Propanoic acid (Propionic acid) and other group of aldehydes and compounds: β -Purrothienol, γ -Purrothienol, α -Purrothienol, β -Purrothienol, γ -Purrothienol, δ -Purrothienol and ϵ -Purrothienol. β -Purrothienol is known as furfural and furfural is a type of chemical compound that can be used for fuel.

APPLICATIONS ON MATERIAL PROCESSING



(Lina Laila, Agni Mahayati, Hidayatullah, 2022)

Substrak (mg/100g)	Asupan (g)	Waktu (s)	Final volume (l)	Conversion (%)
200	5.00	11.43	75.47	687.71
	5.00	18.84	83.56	692.25
	5.00	33.00	92.12	734.82
300	5.00	17.57	78.82	502.88
	5.00	14.11	77.69	694.02
	5.00	19.18	87.16	666.84



MICROWAVE ACTIVATED BRIQUETTE

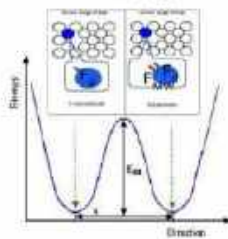
Improving Caloric Energy and Burning Temperature of Microwave Activated Briquette

ENHANCING REACTION MECHANISM

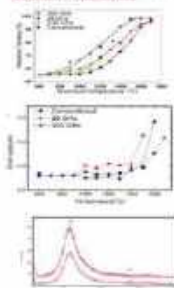
(Maxwell) - [Transport coefficient] (Driving force)

$$J = -D \frac{dc}{dx}$$

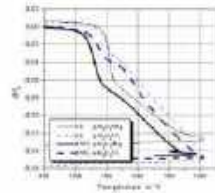
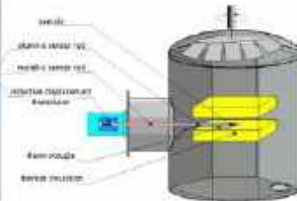
$$D = D_0 \exp\left(-\frac{Q}{RT}\right)$$



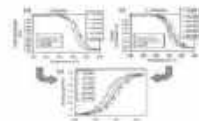
PERFORMANCE IMPROVEMENTS WITHOUT OVERHEATING



DEVIATION FOR CALCULATING ACTIVATION ENERGY OF SOLID MATERIAL



(D. Liu, D. Bao, M. Thaler, 2005)



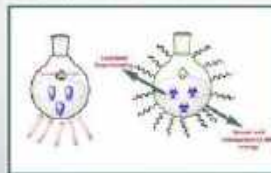
Major Energy Corp,
C.A. Berkens, U.S. Patent, 2001

ENHANCING REACTION MECHANISM

$$D = D_0 \exp\left(-\frac{Q}{RT}\right)$$

Q is Activation Energy

D₀ is associated by the frequency of collisions between molecules



for example, an activation energy of drug compound reaction may be 50 kcal/mole. Commercial microwave power of 300W transfer about 25 cal/sec of energy for 300% efficiency in microwave heating.



Section Natural Sciences and Technology

3D Visualization of Human Movement System Based on Augmented Reality for Junior High School Students Case Study: (SMP Negeri 6 Watubangga)

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²School of Computer Science, Faculty of Information Technology, Universitas Sembilanbelas November Kolaka, Indonesia

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Abstract

Background and Aims: In natural science subjects, especially the sub-material of human movement systems at Sekolah Menengah Pertama (SMP) Negeri 6 Watubangga, it is still carried out conventionally using the lecture method and observing 2-dimensional images on the blackboard and in textbooks. The unavailability of teaching aids to support learning results in the implementation of learning becoming less interesting, monotonous and seeming boring. This causes a lack of enthusiasm and active participation from students. To overcome this problem, artificial intelligence such as augmented reality (AR) technology can be used for empowered learning environment. Augmented Reality (AR) is a technology that combines two-dimensional and/or three-dimensional virtual objects into a real three-dimensional environment and then projects these virtual objects in real time. Augmented Reality technology can be utilized in an effort to create interesting and interactive learning so that it can increase student's engagement. The aim of this research is to create a 3D visualization of human movement system based on augmented reality in natural science subjects for junior high school students. **Methods:** The system development method used is the Multimedia Development Life Cycle (MDLC) which consists of the stages of concept, design, material collection, manufacturing, testing, and distribution. The

result of this research is a 3D visualization of human movement system based on augmented reality that can be run on android smartphone. **Results:** Application testing was carried out on 20 respondents who were grade 8 students at SMP N 6 Watubangga. After testing the system, a percentage of 95% of the 20 student respondents agreed that the 3D visualization of human movement system based on augmented reality made it easier for students to understand the material taught in class. **Conclusion:** Thus, it can be concluded that 3D visualization of human movement systems based on augmented reality can empowered learning environments.

Keywords: Augmented Reality, Natural Science, Multimedia Development Life Cycle, MDLC

Analysis of Chemical Composition, Larvacidal, and Antibacterial Activities of Essential Oil of Citronella (Cymbopogon Nardus L.) Production of Farmers in Kolaka Regency

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Kamaruddin²

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Abstract

Background and Aims: citronella essential oil is also used by the people of Kolaka Regency as a traditional medicine. However, research on citronella essential oil from this region has yet been carried out. This study aims: to analyze the chemical composition, larvicidal activity, and antibacterial activity of citronella (*C. nardus* L.) essential oil produced by farmers from Kolaka Regency against *E. coli* ATCC 35218, *S. aureus* ATCC 25923, *P. aeruginosa* ATCC 14028, and *S. typhi* ATCC 14028. **Methods:** analysis of chemical compounds was carried out using GC-MS (Gas Chromatography-Mass Spectrometry), larvicidal assay using third instar larvae, and antibacterial assay using a paper disc diffusion method. **Results:** citronella essential oil produced by farmers from Kolaka Regency contains 35 chemical compounds with 6 major compounds that are citronellal (15.26%), citronellol (5.61%), geraniol (13.69%), citronellol acetate (6.07%), geranyl acetate (6.11%), and geranyl butyrate (5.04%). Citronella essential oil showed larvicidal activity equivalent to temephos at concentrations of 10000 ppm and 1000 ppm, with the LC₅₀ value of 270 ppm and LC₉₀ value of 1027 ppm. The essential oil displayed no antibacterial activity against *S. aureus* and *P. aeruginosa* at concentrations of 1000-31.2 µg/disc.

The essential oil showed antibacterial activity towards *S. typhi* and *E. coli* showed citronella essential oil had antibacterial activity at concentrations of 1000-31.2 $\mu\text{g}/\text{disc}$. **Conclusions:** Citronella essential oil produced by farmers from Kolaka Regency contained 35 chemical compounds consisting of 6 major compounds of terpenoid (monoterpene) class which have potential as larvicides and antibacterial agents against *S. typhi* and *E. coli*.

Keywords: Antibacterial, Citronella essential oil, GC-MS, Larvicides, Paper disc diffusion method

Analysis of Chemical Compounds and Antimicrobial Activity of Patchouli Oil (Pogostemon Cablin (Blanco) Benth.) From North Kolaka, Indonesia

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³Department of Geography Education, Faculty of Teacher Training and Education, Universitas Sembilanbelas November Kolaka, Indonesia

⁴Politeknik Bina Husada Kendari, Indonesia

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Abstract

Background and Aims: Patchouli (Pogostemon cablin (Blanco) Benth.) is a type of plant that contains essential oils which have important economic value and is one of Indonesia's non-oil and gas export commodities. The main compound that makes up patchouli oil is patchouli alcohol (32.60%). Patchouli is traditionally used as sweat odor remover, wound cleanser, diarrhea medicine, and hair cleanser. Scientific studies related to patchouli oil in North Kolaka Regency are still lacking. This study aimed to determine the chemical compounds contained in patchouli oil (*P. cablin*) and antimicrobial activity against *Staphylococcus aureus*, *Escherichia coli*, and *Candida albicans*. **Methods:** patchouli oil was produced using the Dean-Stark apparatus distillation method, analysis of the composition of the

patchouli oil using GC-MS (Gas Chromatography-Mass Spectrometry), and antimicrobial activity assay using agar well diffusion. **Results:** patchouli oil from North Kolaka Regency has 4 major compounds which are secondary metabolite compounds of the terpenoid group (sesquiterpenes). These major compounds include patchouli alcohol (43.94%), δ -guaiene (12%), α -guaiene (9.96%), and seychellene (7.40%). The results of the antimicrobial activity assay show that patchouli oil from North Kolaka Regency has antibacterial activity against *Staphylococcus aureus* with the largest inhibitory zone diameter, namely a concentration of 10,000 $\mu\text{g}/\text{well}$ (14.1 mm at 18 hours). Patchouli oil from North Kolaka Regency and the antibiotic chloramphenicol 20 $\mu\text{g}/\text{well}$ did not differ significantly ($P>0.05$) against *Staphylococcus aureus*. Patchouli oil from North Kolaka Regency does not have antimicrobial activity against *Escherichia coli* and *Candida albicans*. **Conclusion:** Patchouli oil from North Kolaka Regency has 4 major chemical compounds which have the potential as antibacterial agent against *Staphylococcus aureus*.

Keywords: Antimicrobial, Composition profile of patchouli oil, GC-MS, Patchouli, Well

Analysis of Phytochemical Compounds and Antioxidant Assay of Dichloromethane Extract From Pacikala Seeds (*Etlingera elatior* (Jack) R.M.Smith) From North Kolaka Regency

Nun Ainun Arap¹, Susianti¹, Azahrah Reinal¹, Hajar Rizki Kasman¹, Muhammad Rayzhal Faturrahman¹, Retno Wahyuningrum¹, Harni Sartika Kamaruddin¹, Agung Wibawa Mahatya Yodha², Tien³, Carla Wulandari Sabandar^{1,*}

¹Departement of Pharmacy, Faculty of Science and Technology, Universitas Sembilanbelas November Kolaka, Indonesia

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*Corresponding author: carla@usn.ac.id

Abstract

Background and Aims: *Etlingera elatior* (Jack) R.M.Smith is a type of multipurpose plant from the Zingiberaceae family. In North Kolaka, this plant is used as a traditional medicine to treat sore throats and as a cooking spice to replace tamarind. North Kolaka people tend to use the seeds more than other parts of the plant. Meanwhile, chemical and biological activity studies on pacikala seeds from North Kolaka have never been reported. This study aims to analyze the phytochemical compounds contained in the dichloromethane extract of *E. elatior* seeds, to test the antioxidant activity of dichloromethane extract of *E. elatior* seeds. **Methods:** sampling extraction, phytochemical screening, analysis LC-MS/MS, antioxidant test (dot-blot staining), and antioxidant test (UV-Vis spectrophotometric). **Results:** the dichloromethane extract from *E. elatior* seeds qualitatively contains terpenoid compounds, the LC-MS/MS analysis carried out identified six detectable compounds namely, 3',4',5',5,7,8-hexamethoxy flavone (1), sinensetin glycoside (2), 9-octadecanoid (3), gamboukokoensein A (4), (E)-9- octadecanoid acid (5), and

spinasterol glycoside (6), the dichloromethane extract of *E. elatior* seeds has antioxidant activity as seen from the formation of yellowish white zones on a purple background, the dichloromethane extract of *E. elatior* had antioxidant activity against DPPH free radical scavenging with an SC50 value of 122.2 µg/mL (ascorbic acid value; SC50 10.2 µg/mL). **Conclusion:** The dichloromethane extract of *E. elatior* seeds contain terpenoid compounds and has the potential to be a source of antioxidant compounds.

Keywords: Phytochemicals, Antioxidants, Dichloromethane, *E. elatior* seeds

Analysis of QoS and QoE Comparison of Internet Services at a State University

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Abstract

Background and Aims: Currently, user satisfaction has become one of the most important topics addressed by service providers. Quality of Service (QoS) is the ability of a network to provide guarantees and network performance metrics such as delay, throughput, and packet loss. On the other hand, Quality of Experience (QoE) is an approach to internet service quality, which can explain the significance of service changes based on what users perceive while enjoying the provided services. An interesting issue with the internet service in USN Kolaka is that the availability of internet access, such as Video call/Conference, Video Streaming, and Web Browsing, as perceived by users, still does not fully meet the needs of some users, even though the capacity provided by the service provider is aligned with current requirements. This research aims to analyze the measurement of internet quality both from a technical perspective and through user assessment.

Methods: the method used is the quantitative method, where for QoE, the measured values are delay, throughput, packet loss, jitter. For QoS user satisfaction with the internet service is assessed.

Results: Based on the results of Quality of Service (QoS) and Quality of Experience (QoE) measurement tests, it is observed that the comparison of technical factors (QoS) measured, including parameters like delay, throughput, packet loss, and jitter, shows good values. Similarly, parameters of non-technical quality (QoE) such as content quality, system quality, and service quality, as measured by Mean Opinion Score (MOS), indicate good quality.

Conclusion: it can be deduced that the comparison between QoS

and QoE values does not exhibit a significant disparity, and the current internet service in USN Kolaka is still acceptable.

Keywords: Internet, MOS, QoE, QoS

Analysis of the Design a Mobile Community Health Centre Ship for Health Services in Southeast Sulawesi Waters Using a Catamaran Hull

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Universitas Sembilanbelas November Kolaka, Indonesia

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Abstract

Background and Aims; Buton Regency, which is located in Southeast Sulawesi, currently has coastal areas that are separated by the sea. The remote location and limited transportation access require the government to provide alternative solutions to solve health service problems. The solution offered is the use of mobile health center ships to go directly to the location of people who need health services. This study aims to determine the cost of making a catamaran type mobile health center ship that can be used for health patient services. **Methods:** The method used in this research is to make an initial design of a catamaran ship that is suitable for the ship's operational area. Resistance ship calculations using 2 methods, namely numerical methods and empirical methods. The numerical method uses Maxsurf software to determine the amount of resistance produced by the ship design, then the empirical method uses the Holtrop method and Compton method. **Results:** The design ship data was created using the trial and error method combined with the results of interviews with local stakeholders. The main dimensions are the overall length of the ship is 15 m, the width of the ship is 5 m, the width of the hull is 3.2 m, the height of the ship is 1.25 m, the ship's draft is: 0.75 m which is designed to be equipped with 4 patient beds, a doctor's table, a table nurses, waiting chairs, toilets and multi-purpose storage. **Conclusion:** The ship design has a calculation of the ship's resistance at a speed of 10 knots which is 7.5 kN using the Holtrop method, 9.2 using the Compton method. The power produced is 39

kW using the Holtrop method and 48 kW using the Compton method. The engine power used is 15 HP with manufacturing costs reaching Rp 1,329,645,000,00.

Keywords: Catamaran, Cost, Health Center Ship

Analysis of the Thermodynamic Properties of Iron on the Efficiency of The Heat Work System

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Universitas Sembilanbelas November Kolaka, Indonesia

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Abstract

Background and Aims: Analysis of the thermodynamic properties of iron on the efficiency of the heat work system is one of the interesting research topics. Where the purpose of conducting this experiment is to explain and understand the thermodynamic properties of iron, the efficiency produced in the experiments carried out, and understand the relationship between the thermodynamic properties of materials and the efficiency of the heat work system. **Methods:** Writing this paper through literature study procedures, both book media and the internet. All information and ideas that have been obtained in this paper, are combined into a single and comprehensive unit, to explain papers about the second law of thermodynamics and its applications, so that we can draw conclusions from the essence of the discussion in this paper. Then do the experiment according to the title using the experimental method. In this experiment, the material being measured was iron (Fe). **Results:** So the results of measuring the length of the iron were 10 cm, with a diameter of 0.5 cm and a mass of 14 grams. And the initial temperature of the iron was obtained, which was 34.7°C while after being heated for 30 seconds the temperature increased to 69.7°C. From this measurement data, an efficiency analysis of the heat work system can be carried out, with an efficiency value of 10.3%. **Conclusion:** From the results of the experiments and analysis carried out, it can be concluded that the thermodynamic properties of iron can conduct heat quickly. The efficiency value is the ratio of the work done by the iron to the absorbed heat of 10.3%.

Keywords: Thermodynamics, Iron, Efficiency, Heat

Antibacterial Activity of Cocoa Leaf Ethanol Extract Gel Preparation (*Theobroma cacao* L.) Against Acne-Causing Bacteria *Cutibacterium acnes* and *Staphylococcus epidermidis*

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Abstract

Background and Aims: Cocoa (*Theobroma cacao* L) plant for Indonesian plantations. One of the largest cocoa-producing areas in Indonesia is Kolaka Regency, Southeast Sulawesi. On cocoa plantations, a lot of waste is produced in the form of cocoa leaves because cocoa processing has focused on the fruit shell and seed, also trimming the shape to increase cocoa production. However, based on their compound, cocoa leaves have another potential that can have high economic value, as an antibacterial. This study aims to determine antibacterial activity of cocoa leaf ethanol extract gel preparation (*Theobroma cacao* L) against acne-causing bacteria *Cutibacterium acnes* and *Staphylococcus epidermidis*. **Methods:** The method used was experimental by testing the antibacterial activity of gel preparations containing various concentrations of cocoa leaf extract, 25%, 30%, and 35%, using the agar well diffusion method with a positive control of *Theobroma* 0,1% 10% Gentamicin and a negative control of gel preparations without the extract. The cocoa leaves were collected from Ladongi District, Kolaka Regency and the older leaves were chosen as sample in this research. **Results:** The results showed that the ethanol extract gel preparation of cocoa leaf showed antibacterial activity against *Cutibacterium acnes* and *Staphylococcus epidermidis*. The best

inhibition zone formed at an extract concentration of 3025%, with the diameter of the inhibition zone against *Cutibacterium acnes* and *Staphylococcus epidermidis* was as 135,2593mm and 12,495.95 mm. **Conclusion:** The size of the inhibition zone formed indicates the effectiveness as an antibacterial of the cocoa leaf extract gel preparation. Thus, the optimum concentration of cocoa leaf extract in form as gel preparation was 30% against acne-causing bacteria both *Cutibacterium acnes* and *Staphylococcus epidermidis*.

Keywords: antibacterial, acne, cocoa leaves leaves, extract, gel, onclusion.

Antibacterial Activity of Mangrove Leaf Extract (*Rhizophora apiculata*) Against Pathogen Bacteria

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Abstract

Background and aims: Nowadays many plants can be used as traditional medicines to overcome various diseases including infections, because the use of traditional medicines is relatively safer compared to drugs derived from chemicals. One of the local plants in Southeast Sulawesi that has been empirically used as a medicine for wounds is a race of plants. Mangrove plants (*Rhizophora apiculata*) is one of the plants that have antibacterial potential because the plant contain bioactive compounds such as alkanoids, saponins, flavonoids and tannins. These antibacterial compounds can inhibit various pathogen bacteria such as *Salmonella thypi* dan *Staphylococcus aureus*. This research aims to determine the inhibition of mangrove leaf extract (*Rhizophora apiculata*) against bacteria that cause infection, were *Salmonella typhi* and *Staphylococcus aureus*. **Methods:** This type of research is experimental laboratory use the agar diffusion method. The samples used were mangrove leaf extract made at 5 concentrations, there are 20%, 40%, 60%, 80% and 100%. **Results:** Research shows that Mangrove leaf extract at concentrations of 20%, 40%, 60%, 80% and 100% is able to inhibit *Salmonella typhi* bacteria with an average diameter of the inhibition zone, were 6.085 mm, 9.725 mm, 10.475 mm and 12.4 mm, 18.275 mm, whereas the positive control Chloramphenicol had an average diameter of the inhibition zone, was 39.2 mm and the negative control distilled water 0 mm. Mangrove leaf extract can also to inhibit bacteria with an average diameter of the inhibition zone, were 65mm, 6.45mm, 7.7mm, 8.25mm, then 14.1mm, whereas the positive control

Tetracycline had an average diameter of the inhibition zone, was 56,1 mm and the negative control distilled water 0 mm.

Conclusion: Mangrove leaf extract has antibacterial activity against *Salmonella typhi* bacteria and *Staphylococcus aureus* bacteria.

Keywords: *Rhizophora apiculata*, inhibitory power, Pathogen bacteria

Assessing the Impact of Different Organic Acids in Stingray Skin Vegetable Tanning

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Abstract

Background and Aims: The leather business is an industrial approach that may transform fresh skin, a byproduct of the abattoir, into high-value materials used in shoes, coats, wallets, and other products. Because stingray waste with cream has yet to be widely used for leather, stingray tanning is an interesting process to explore the coastal source development. Pickling with acid is one of the crucial procedures in leather tanning. Investigating the effects of different acids is the goal of this stud.

Methods: Twelve sheets of stingray skin were tanned by vegetable tanning method. Vegetable tanning process consists of soaking, liming, deliming, bating, degreasing, pickling, and tanning. Three percent of organic acid, such as formic acid, acetic acid, citric acid, and oxalic acid, were used in the pickling process as variations of pickling agent type. Physical quality tests were performed on the tanned leather products, including measurements of the material's tensile strength, elongation, flexibility, tear strength, sewing strength, and wrinkle temperature. The test results were analyzed using the one-way ANOVA method, followed by the Duncan Multiple Range Test (DMRT) method.

Results: Based on the results of statistical analysis, it was found that stingray skin treated with citric acid had the best tensile strength sewing strength, wrinkle temperature and elongation test results.

Conclusion: Citric acid was the best pickling agent for stingray skin tanning.

Keywords: organic acid, pickling, stingray, vegetable tanning

Biomass Waste into Hydrogen and CNTs for Sustainable Renewable Energy by Microwave Irradiation

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Abstract

Background and Aims: Although the amount of cellulose-rich biomass waste is increasing every year, much of it is still incinerated or disposed of in landfills. As a solution, biomass is the most abundant renewable resource and has a low environmental impact, so attempts to convert it into a sustainable energy source that can replace fossil fuels have been attracting attention in recent years. In particular, cellulose gasification is an efficient method that not only converts cellulose into hydrogen but also produces highly valuable nanocarbon materials. However, it is difficult to control decomposition temperature and shorten processing time, and the resulting hydrogen gas contains byproducts such as CO and CO₂. **Methods:** In this study, we propose to rapidly and easily obtain high-purity hydrogen gas and high-value-added nanocarbon materials from a mixture of cellulose and iron-based catalysts using microwave irradiation. **Results:** A cellulose was successfully converted to hydrogen-based syngas and carbon-containing residues. From the Raman spectra measurement, the residue after cellulose heating showed a Radial Breathing Mode (RBM) peak in the low wavenumber region, suggesting that it is a

Single-Wall Carbon NanoTube (SWCNT). Such SWCNT formation was not observed when HDPE was used as a raw material and may be an effect unique to cellulose. **Conclusion:** In this presentation, we will report the results of a detailed analysis of the obtained hydrogen gas and our efforts to optimize the microwave heating conditions.

Keywords: Microwave-heating, Biomass, Cellulose, Hydrogen, CNTs

Biosensor: Detector of Benzene Compound Using Biofilm *Pseudomonas* sp. Combined Screen-Printed Carbon Electrode

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Abstract

Background and Aims: Benzene is a dangerous chemical compound that can be a threat to the environment and health. Benzene detection in the environment take a long time and expensive. Therefore, this research aims to develop a method for detecting benzene through *Pseudomonas* sp. biofilm combined Screen-Printed Carbon Electrode (SPCE) becomes a biosensor.

Methods: Benzene dioxygenase was secreted by *Pseudomonas* sp. This enzyme can detect benzene compounds by oxidation process, then *Pseudomonas* sp. was formed into biofilm on the SPCE. Benzene can be oxidized enzymatically by microbes. In this study, the biosensor performance was optimized with variations of benzene concentrations, bacterial density, and pH. Data were evaluated using Minitab software with surface response method. Optimized condition of biosensor was 3 mM benzene concentration, 1.4×10^{11} sel/mL bacterial density, and 7.5 pH. The optimization results were used to evaluate the analytical performance of the biosensor. **Results:** Values of generated analytical performance in linearity were in the range 2 of 1-6 mM,

and the linear regression equation of $y = 21.593x + 101.81$ with $R = 0.9976$. Detection and quantity limits were 0.2875 mM and 0.9583 mM, respectively. The method sensitivity was 21.593 $\mu\text{A}/\text{mM}$. In addition, the strength of contaminant compounds was found as follows: $\text{NaCl} > \text{CaCl}_2 > \text{KCl} > \text{NH}_4\text{Cl} > \text{MgSO}_4 \cdot 7\text{H}_2\text{O} = \text{CaCO}_3$. This benzene biosensor had moderate accuracy below 5% (in % SBR). However, the stability of benzene biosensor remained in 35 days. This demonstrates that *Pseudomonas* sp. biofilm-based biosensor on the SPCE was potential to be used as an alternative method for the monitoring and detecting of benzene contamination. **Conclusion:** This benzene biosensor is practical, inexpensive, and is potential to be developed as a prototype.

Keywords: benzene, biofilm, biosensor, *Pseudomonas* sp., SPCE

Characterization of Cypress Essential Oil Extracted by Eco-friendly Microwave Vacuum Distillation Method

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Abstract

Background and Aims: In recent years, the microwave distillation method has attracted attention because the components in the essential oil extracted from plants are different from the conventional extraction method. In addition, as an initiative that contributes to the realization of a sustainable society, research on the effective use of mountain forest resources is underway. Our group has developed a microwave vacuum distillation device and has mainly extracted essential oils from cedar. Previous studies have suggested that microwave vacuum distillation can extract essential oils faster than conventional distillation methods and is advantageous for extracting sesquiterpenes with heavy molecular weights. **Methods:** In this study, we focused on cypress from Fukui Prefecture and conducted microwave vacuum distillation. The extraction conditions of the fragrant essential oils were optimized by changing the pressure, microwave power, and microwave irradiation methods such as continuously or intermittently. Chip-shaped cypress 200 g and distilled water 500 g were mixed in a blender, and microwave vacuum distillation was performed at a constant microwave power of 400 W. **Results:** The essential oil could not be extracted at 53 hPa but was obtained at 413 and 813 hPa. In addition, the essential oil obtained at 413 hPa

had a stronger aroma than that obtained at 813 hPa. Furthermore, component analysis of essential oils obtained using GC-MS showed, for example, that sesquiterpenes were detected in more significant amounts than in the essential oil obtained by conventional heating. **Conclusion:** In this presentation, we discuss the results of detailed component analysis and experimental results under other conditions.

Keywords: Microwave, Essential Oil, Evaluation, Forest Conservation

Charge-transfer and Mass-transport Mechanisms in the Iodine-Iodide Redox Reaction in Aqueous Solution

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Abstract

Background and Aims: Wet-type solar cells such as dye sensitized solar cells (DSSCs) utilize an organic solvent, such as acetonitrile, which contains high concentrations of iodine ions, to transport charge between a TiO₂ generating electrode and a Pt counter electrode. **Methods:** The organic solvent is employed due to its high solubility for iodine ions; however, its instability and flammability have been obstacles for practical applications. Therefore, the use of water as a solvent was considered. To enhance charge transport, a high concentration is important, but water scarcely dissolves electrically neutral iodine, predicting electrode deposition in its oxidized form. Using potassium sulphate as a supporting electrolyte and varying the concentration of potassium iodide between 0.15 and 1000mM, cyclic voltammograms (CVs) were obtained at a Pt disk electrode. **Results:** Two-step CVs, characteristic of the iodine-iodide ion based on $6 I^- \leftrightarrow 2 I_3^- + 4e \leftrightarrow 3I_2 + 6e$, were observed even in aqueous solution. When the concentration of potassium iodide exceeded 5 mM, iodine was formed and deposited in the second oxidation reaction, altering the shape of the CVs and resulting in a steady current flow during potential sweep. At concentrations below 3 mM, Spectro-electro-chemistry revealed absorbance indicative of intramolecular charge transfer reactions in I₃⁻. **Conclusion:** This suggests that not only in organic solvents but also in aqueous solutions, the charge transfer rate is enhanced by the Grotthuss Mechanism. The charge transport capability of the deposited iodine will also be reported.

Keywords: dye sensitized solar cells, iodine-iodide redox reaction, Grotthuss mechanism

Chemical Compound Characterization, Antioxidant and, Acute Toxicity of 96% Ethanol Extract and Organic Fractions of Balongga (*Melothria Scabra* Naudin)

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Abstract

Background and Aims: Balongga is a plant of the local wisdom of Southeast Sulawesi which is consumed as food and is useful for lowering blood pressure, sores, and cholesterol. However, study of scientific data regarding its pharmacological and toxicological activities is still in a handful. Objectives: This study aimed to examine the characterization of chemical compounds, TPC, TFC, antioxidant activity, and acute toxicity of 96% ethanol extract and organic fractions of balongga fruit. **Methods:** chemical compound characterization using specific reagents and LC- MS/MS analysis using the UPLC method, total phenolic assay (TPC) and total flavonoid assay (TFC), antioxidant activity assay using dot blot staining and spectrophotometric methods, as well as acute toxicity tests towards *Artemia salina* using the BSLT method. **Result:** the 96% ethanol extract and organic fractions of Balongga fruit contain alkaloids, tannins, flavonoids, terpenoids, and saponins. Six compounds were successfully identified from the ethanol extract of Balongga fruit, that are D-1-[(3-Carboxypropyl) amino]-1-deoxyfructose (1), fructose (2), valine (3), 1 β ,3 α ,9 β -Trihydroxyeudesma-5,11(13)-dien-12-oic acid (4), kukurbutacinB-2-O- α -L-rhamnopyranosyl- β -D-glucopyranoside (5), and 2-Heptyl-

3-hydroxy-4(H)-quinolone (6). The 96% ethanol extract and organic fractions (methanol and ethyl acetate fractions) of Balongga fruit showed potent radical scavenging activity indicated by SC50 values of 37.5 µg/mL (the 96% ethanol extract), 28.6 µg/mL (methanol fraction), and 20.7 µg/mL (ethyl acetate fraction) when compared to the values of ascorbic acid, gallic acid and quercetin (SC50 of 2.8 to 9.4 µg/mL). The 96% ethanol extract and organic fractions (methanol and hexane fractions) showed no toxicity towards *A. salina* as indicated by the LC50 value, namely.

Conclusion: The 96% ethanol extract and organic fractions of Balongga fruit can be developed as nutraceuticals and pharmaceutical raw materials for antioxidants.

Keywords: *M. scabra*, chemical compound, toxicity, antioxidant, Cucurbitaceae

Composite Of Graphen Oxide, GO-N/NiO/TiO₂: For Applications Of Lithium Ion Battery Anode Electrode

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Abstract

Background and Aims: A good battery has high specific energy, high energy density and efficiency, high specific capacity and long life cycle, and has fast charging capability. Modifying the battery according to the chemical composition of the electrolyte material, and using electrodes with strong materials will result in a larger battery specific capacity. **Methods:** This research began by synthesizing graphene oxide (GO) from graphene using the Hummers method and then continuing to synthesize nitrogen-doped graphene oxide (GO-N) composites based on urea by using the Hydrothermal method. GO-N composite is mixed with NiO and TiO₂ anatase in the ratio; 80:20:0 (%w/w), 80:0:20 (%w/w), 80:15:5 (%w/w), 80: 10:10 (%w/w), 80: 5:15 (%w/w) and 100:0:0 (%w/w) as much as 0.1 g and added liquid paraffin then heated at a temperature of 80°C. The obtained GO-N/NiO/TiO₂ electrodes were characterized by FTIR, SEM, and CV (Cyclic Voltammetry). **Results:** FTIR characterization results show the presence of N- -1 - H, C-N, C=O, O-H, Ni-O, and Ti-O functional groups at wave numbers 3078 cm⁻¹, 1400 cm⁻¹, 1708 cm⁻¹, 3451 cm⁻¹, 700 cm⁻¹ and

800 cm^{-1} respectively. SEM shows the surface morphology of NiO/TiO₂ particles distributed in the GO-N composite. **Conclusion:** Measurement of the specific capacity of the GO-N/NiO/TiO₂ anode electrode using (CV) at the best composition of 80:15:5 (%w/w) was 862.18 Fg^{-1} . The GO-N/NiO/TiO₂ anode electrode can be used as a supercapacitor material for Lithium Ion batteries.

Keywords: electrode, battery, GO-N/NiO/TiO₂ composite, Lithium-ion, specific capacity

Computational Chemistry Study of 4,5-Diphenyl-1H-Imidazole Derivative Compounds as Iron Corrosion Inhibitors

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Abstract

Background and Aims: The compound 4,5-diphenyl-1H-imidazole is a heterocyclic amine compound that features two nitrogen atoms in its ring and is effectively utilized as a corrosion inhibitor in various corrosive environments. **Methods:** Computational chemistry research on derivative compounds of 4,5-diphenyl-1H-imidazole as iron corrosion inhibitors has been conducted using the ORCA program package with the Density Functional Theory (DFT) method, specifically the B3LYP method, and the 6-31G(D) basis set. The analyzed inhibitor molecules are derivatives of 4,5-diphenyl-1H-imidazole, denoted as Inh A, Inh B, Inh C, and Inh D, both in aqueous solutions and under vacuum conditions. **Results:** Optimization of quantum parameters for these derivative compounds of 4,5-diphenyl-1H-imidazole includes EHOMO, ELUMO, HOMO (Highest Occupied Molecular Orbital), LUMO (Lowest Unoccupied Molecular Orbital) contours, and Electrostatic Potential (ESP). The optimization results were employed to calculate the values of energy gap (ΔE), electronegativity (χ), dipole moment (μ), hardness (η), softness (σ), electrophilicity (ω), nucleophilicity (ϵ), charge transfer electrons (ΔN), interaction energy ($\Delta\psi$), and back-donation energy (ΔE_{b-d}) to determine the stability of the inhibitors. The research results demonstrate that Inh D exhibits excellent corrosion inhibition efficiency compared to other inhibitors. This is clear from the 28.63% increase in corrosion

inhibition efficiency in aqueous solutions and a 28.65% increase under vacuum conditions, as indicated by various quantum parameter values. Additionally, Inh D forms efficient structures when binding to iron atoms. The introduction of electron donor substituents enhances the corrosion inhibition efficiency of Inh D, leading to the formation of complex structures when bound to iron atoms. **Conclusion:** Therefore, compound Inh D, a derivative of 4,5-diphenyl-1H-imidazole, is a potential candidate as a corrosion inhibitor compound compared to others based on computational chemistry studies.

Keywords: 4,5-diphenyl-1H-imidazole, DFT, Organic Inhibitors, Substituent Anticorrosive

Contactless Biometric Based on Palm Vein Recognition Using Wavelet and Local Line Binary Patterns

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Abstract

Background and Aims: Palm vein recognition is contactless, it does not require direct contact of the user and sensor. Therefore, the palm vein recognition provides several advantages in terms of convenience of acquisition, more hygienic, and difficult to forge. In palm vein recognition, the pattern of palm vein is considered as a piece of texture feature. **Methods:** The texture-based feature extraction method that used for palm vein recognition such as Local Binary Pattern (LBP) has problem in term of discrimination ability to describe the sparse texture of palm vein image, this can affect the accuracy of recognition result. The straight-line shape of LLBP operator is more suitable to describe the sparse texture of palm vein image than the square shape of LBP operator. However, because it uses the basic concept of LBP, LLBP also has high dimensional image descriptors, therefore it needs to be reduced so it does not increase the computational time of system. The 2D Wavelet Transform is a method that can reduce the dimension of an image without eliminate the important information from it. Of those reasons, this study proposes LLBP method for extracting the texture features of the decomposed palm vein image from 2D Wavelet Transform so that the size of the image descriptors can be reduced and suitable for the characteristic of the sparse texture in palm vein images. **Results:** This proposed texture-based feature extraction method applied with Fuzzy k-NN method on the 600

images of CASIA MS-palmprint V1.0 dataset. The obtained mean accuracy of CRR is 94.0% with 5.7 seconds of computational time.

Conclusion: Thus, it can be concluded that the proposed method in this study that combined 2D Wavelet Transform and Local Line Binary Pattern (LLBP) capable of extracting texture features on palm vein images.

Keywords: contactless biometrics, Fuzzy K-NN, Local Line Binary Patterns, palm vein, Wavelet

Design of Monitoring System for Lead (Pb) pollutant in water using Nickel Slag Nanomaterial as Voltammetric Electrode Modifier

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Abstract

Background and Aims: The increasing amount of nickel slag in the environment is reported as solid waste which endangers living things and the environment. It is reported to contain heavy metals which can be washed into water bodies and enter the food chain cycle. It gradually has an impact on human health problems. So managing it as an environmentally friendly material is very urgent. The design of nickel slag nanomaterial (NSN) as an electrode component for application in the detection of lead (Pb) by voltammetry has been successfully carried out. **Methods:** The preparation stage begins with grinding and screening of nickel slag waste. Next, the NSN powder was put into a Teflon-lined stainless steel autoclave and heated at 180oC for 2 hours. The precipitate was calcined at a temperature of 600oC and incorporated with Graphite to obtain an NSN/Graphite electrode. **Results:** SEM and XRD characterization results describe the morphology of NSN which are composed of solid particles of varying sizes. NSN calcination at 600oC causes changes in morphology and average diameter size, where the average diameter of NSN is 27.77 nm. Testing of the electrochemical behavior of NSN/Graphite on the Fe(CN)₆³⁻/ Fe(CN)₆⁴⁻ solution system illustrates superior behavior marked by high redox current peaks and fast electron transfer rates. These conditions resulted from the application of NSN/Graphite with a mass composition (w/w) of 2:5. Another superior behavior was also demonstrated when detecting Pb (II) in aqueous solutions. Pb (II) undergoes a reversible reaction with

anodic potential (E_{pa}) and cathodic potential (E_{pc}) values of -0.10 V and -0.24 respectively. In addition, NSN/Graphite has good detection sensitivity, indicated by the LOD and LOQ values of 3.95 μM and 5.27 μM , respectively. **Conclusion:** Overall, the results of this work illustrate the potential of NSN for further study regarding the further development of voltammetry-based Pb (II) detection systems in the future.

Keywords: Pb pollutant, nickel slag, NSN/Graphite, voltammetry detection.

Development of Cryogenic and High-Frequency Magnetic Resonance Apparatus

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Abstract

Background and Aims: Magnetic resonance measurements by Electron Spin Resonance (ESR) and Nuclear Magnetic Resonance (NMR) provide useful information in the search for physical properties of spin systems and are applied in a wide range of fields. It is generally known that higher resolution can be obtained at higher magnetic fields, and the measurement range has been expanded with the development of high-frequency light sources. In the aspect of measurement temperature, thermal fluctuations are suppressed in the ultra- low temperature region (below 1 K), which is close to absolute zero. This can cause quantum effects to be pronounced, and the development of ultra-low temperatures in the measurement temperature range is also an important theme in the development of instruments. **Methods:** In this overview, we will mainly introduce the contents related to the dilution refrigerator, but we will also introduce our recent development of a new ESR measurement system using a high-power wave source

gyrotron. In recent years, there has been a great deal of research and development in the field of Dynamic Nuclear Polarization (DNP)-NMR, which combines ESR and NMR. DNP is a phenomenon in which nuclear spins are polarized when ESR transitions are strongly excited in hyperfine interacting materials. Samples used for such measurements are often spin dilute, requiring highly sensitive ESR measurements. In addition, an ultra-low temperature environment is necessary to maintain the polarized state of nuclear spins. **Results:** The applications of these techniques and environments is expected to be applied to magnetic resonance solid-state quantum computing (QC), in which ^{31}P doped dilute in Si wafers are used as a quantum bit. **Conclusion:** In order to demonstrate the double magnetic resonance of ESR and NMR using the developed FPR and meanderline, Si:P electron-nuclear double resonance (ENDOR) and DNP-NMR were performed at 220 mK. and the spin-echo signal of the ^{31}P nucleus was successfully detected. This result suggests that Si:P can be initialized and operated as a magnetic resonance QC.

Keywords: magnetic resonance, ESR, NMR, low-temperature, gyrotron, meanderline

Development of Microwave Energy Application Technologies for a Sustainable Development-Oriented Society: Initiatives at the University of Fukui

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Abstract

Background and Aims: Nowadays, the world is undergoing a rapid paradigm shift in energy to realize a sustainable development-oriented society. For example, there is a shift from fossil fuels to renewable energy, and from large-scale centralized power sources to individually distributed power sources. In order to respond to these social demands, various research and development efforts are being actively promoted. The University of Fukui's Faculty of Engineering has a long history of growth together with the textile industry (polymer industry). The University of Fukui also has a world-class research center for electromagnetic wave generation and application research in the high-power microwave to terahertz wave regions and is promoting worldwide collaborative research. **Methods:** Our group is conducting research that contributes to the energy paradigm shift described above by taking advantage of these characteristics. In order to compensate for the unstable supply of renewable energy, it is expected that energy can be used stably by converting renewable energy into hydrogen and using it in a complementary manner. Therefore, we have found that hydrogen can be efficiently extracted from plastic and plant fibre waste by introducing a microwave-activated metal catalyst, it was possible to efficiently extract hydrogen at less than half the reaction temperature. They have also succeeded in extending the lifetime of the metal catalyst to a very long time. In addition, from the viewpoint of effective

utilization of forest and agricultural resources, research on microwave-assisted extraction of plant oils is underway. **Results:** The demand for batteries as a distributed power source is rapidly increasing. The refining of rare metals, including nickel, which is important as a battery material, requires high-temperature heat treatment and uses coal, which releases a lot of carbon dioxide. In order to realize carbon neutrality, we are conducting international joint research with a group at Halu Oleo University on the efficient refining of nickel ores using the non-thermal effects of microwave energy instead of coal energy. In addition, interesting phenomena have been observed in microwave processing of thermoelectric materials. **Conclusion:** Research is also underway on titanium dioxide, which is used in charge transfer reactions and electrodes for wet solar cells such as dye-sensitized solar cells (DSSCs) to convert light energy into electrical energy. Quantum information processing is also attracting attention as one of the science and technology innovations for achieving the SDGs, for example, solving optimization problems by quantum computation (QC). We are also engaged in basic research to measure the quantum state of individual spins by magnetic resonance using electromagnetic waves in the terahertz wave region, which can be attributed to the development of quantum computers.

Keywords: Keywords; Microwave, Hydrogen, Polymer, Nickel, DSSCs, QC

Effect of Sintering Temperature Variation on Iron Sand Surface Morphology and Chemical Element Composition

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Abstract

Background and Aims: This research aimed to investigate the effects of sintering temperature variations on the surface morphology and chemical element composition of iron sand from Pasir Hitam Beach in Wolowa Baru Village, Buton Regency.

Methods: Sample collection was carried out by spatial random sampling method. Sample preparation involved washing, drying, extraction, grinding, and sieving. Subsequently, sintering processes were conducted at various temperatures of 600°C, 700°C, 800°C, and 900°C for 10 minutes. Sample characterization was performed using SEM-EDX to obtain information about the surface morphology and the chemical composition of the samples.

Results: SEM characterization results revealed irregular morphology on the particle surfaces. EDX characterization results showed significant changes in the elemental content as the sintering temperature increased. Higher sintering temperatures resulted in increased content of heavier metal elements. **Conclusion:** Therefore, it can be concluded that the sintering process alters the surface morphology of iron sand and changes its chemical element composition.

Keywords: chemical element composition, iron sand, sintering temperature, surface morphology

Electrochemical Performance of N-Graphene Supported NiO/TiO₂ Anodes

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Abstract

Background and Aims: In the development of battery technology and energy storage, the role of the anode is crucial. The use of efficient anode materials can significantly enhance battery performance. In this study, the focus is on evaluating the electrochemical performance of anodes made from N-graphene supported NiO/TiO₂ composites, with the hope of improving battery efficiency and capacity. **Methods:** A new strategy is employed to synthesize a unique thin film structure composed of nitrogen-doped graphene (NGr) combined with coupled NiO/TiO₂ hollow nanospheres using a synergistic hydrothermal method. **Result:** The NGr@NiO/TiO₂ composite characteristics are demonstrated by several rational characterization techniques such as the morphological shape of NiO/TiO₂ hollow nanospheres which are evenly distributed on the surface of N-graphene with particle distribution in the range 79.78-362.13 nm with an average diameter of 130 nm. In addition, the crystal structures of carbon from NGr, NiO, and TiO₂ (anatase and rutile) have been

confirmed and proven by spectra showing the presence of C-N stretching primary amides (1400 cm^{-1}), Ni-O stretching (700 cm^{-1}) and Ti-O-Ti bond (425 cm^{-1}), respectively. In order to optimize cyclic voltammetry (CV) performance for electrochemical testing, parameters such as cycle effect, scan rate, and composition are adjusted. This ensures that each condition has a reversible voltammogram. By using a composite ratio of 80:10:10 (wt%) and a slower scan rate, high specific capacity values are achieved. The NGr@NiO composite exhibits the highest Cps value of 1959.71 F/g. Additionally, the NGr@NiO/TiO₂ composite with a composition of 80:15:10 demonstrates the best Cps value of 839.83 F/g. **Conclusion:** Based on this, it is revealed that NGr@NiO/TiO₂ composites can explore the potential and be fully applied in the development of alkaline metal ion (AIB) batteries such as Li/Na/K.

Keywords: Battery, anode material, N-Graphene, NiO-TiO₂, cyclic voltammetry

Electrode Design of Graphene modified ZnO/PANi as a Sensitive Detection of Phenol Micropollutant

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Abstract

Background and Aims: Bioaccumulation of micropollutants in water, especially of phenol compounds and their derivatives, has become a major issue due to the rapid growth of the chemical and agricultural industries. This study was aimed at developing an electrochemical sensor for the detection of phenol, a harmful organic pollutant for both humans and the environment. The sensor was developed by investigating metal oxide and conductive polymer modifiers on graphene electrodes to enhance the sensitivity for the phenol detection. In this research, the production of an electrode is discussed that is very sensitive to phenolic compounds using a composite of zinc oxide and polyaniline modified graphene (Gr/ZnO@PANi). **Methods:** The Gr/ZnO nanocomposite synthesis was carried out using a simple hydrothermal method and modification of PANi on the electrode surface by the electropolymerization method. Nanocomposite characterization has been carried out using x-ray diffraction (XRD), scanning electron microscopy-energy dispersive X-ray (SEM-EDX), and cyclic voltammetry (CV) techniques. **Results:** It was found that the Gr/ZnO@PANi composite electrode can detect phenol effectively, with an efficient electron transfer occurring at a low oxidation potential. Additionally, it was observed that the electrode sensitivity to the phenol concentration was remarkably linear within a range of 10^{-6} - 10^{-1} M, and its limit of detection was as low as 0.0515 μ M. Furthermore, the Gr/ZnO@PANi composite electrode exhibited excellent stability in detecting phenolic

compounds, as indicated by the low stability coefficients of the relative standard deviation for reproducibility (0.37%) and the randomized strategic demand reduction (1.02%). **Conclusion:** Those findings suggest that the new Gr/ZnO@ PANi composite electrode is a promising tool for the sensitive detection of phenol in the environment, which could contribute to mitigating its negative impacts on human health and ecosystems. Future studies could explore the potential applications of this sensor for detecting other types of pollutants as well.

Keywords: electrochemical methods, graphene, phenol, polyaniline, zinc oxide

Enhancement of Capacity and Selectivity of Natural Zeolite Adsorption towards Hg(II) in the Presence of Mg(II) in Solution

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Abstract

Background and Aims: This research aims to enhance the adsorption capacity of natural zeolite towards Hg(II) ions in the presence of Mg(II) in the solution through activation and immobilization of dithizone. **Methods:** Natural zeolite activation was performed using 6 M HCl, and zeolite surface modification was achieved through dithizone immobilization. Zeolite characterization was conducted using XRD and FTIR. Metal adsorption studies included interaction time and initial metal concentration. Adsorption mechanisms were studied through sequential desorption using deionized water, KNO₃, HONH₂·HCL, and Na₂EDTA as solvents. Concentrations of each metal ion remaining after adsorption and desorption were determined using Atomic Absorption Spectrophotometry. **Results:** FTIR and XRD data indicate successful dithizone immobilization on activated natural zeolite. The optimal conditions for Hg(II) ion adsorption in the presence of Mg(II) on dithizone-immobilized zeolite were a contact time of 45 minutes and an initial metal ion concentration of 80 ppm. Simultaneous adsorption on activated zeolite and dithizone-immobilized zeolite followed pseudo-second-order kinetics with rate constants for Hg(II) ions of 3.162 and 12.940 g mg⁻¹ min⁻¹ and equilibrium constants of 0.411 and 0.444, respectively. Adsorption followed the Freundlich adsorption isotherm model with Freundlich constants on activated natural zeolite and dithizone-immobilized zeolite for Hg(II) ions of 2.056

and 2.713 mg/g with values of $1/n$ being 1.992 and 0.921. The simultaneous adsorption mechanism of Hg(II) ions in the presence of Mg(II) by dithizone-immobilized zeolite involved several interactions, including ion exchange (25.42% and 7.70%), hydrogen bond formation (13.62% and 9.61%), complex bond formation (11.74% and 3.33%), and encapsulation mechanism (0.17% and 3.89%). **Conclusion:** the study successfully enhanced the adsorption capacity of natural zeolite for Hg(II) ions in the presence of Mg(II) through dithizone activation and immobilization, demonstrating promising potential for efficient metal ion removal.

Keywords: natural zeolite, dithizone, adsorption, Hg(II) ions

Inhibitory Activity of *Macaranga tanarius* Extract modified AgNP as an Anti-bacterial

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Abstract

Background and Aims: The potential of plant extracts in preparing anti-bacterial drug formulations has been the focus of studies in recent years. This potential leads to the synthesis of anti-bacterial materials based on metal-organic frame work. **Methods:** Based on this, this study reports on the inhibitory activity of *Macaranga tanarius* extract modified by silver nanoparticles (*M.tanarius*/AgNPs). The process of synthesizing *M.tanarius*/AgNPs begins with an extraction stage followed by hydrothermal at a temperature of 180oC for 3 hours in an autoclave hydrothermal reactor. **Results:** Theresults of UV-Vis spectroscopic characterization showed molecular absorption at maximum wavelengths (λ_{max}) of 370 nm and 434 nm. In FTIR characterization, *M.tanarius*/AgNPs molecules actively absorb IR at wave numbers of 3441.01 cm^{-1} (-OH stretching), 2981.95 cm^{-1} (C-H stretching), 2079.26 cm^{-1} (C=C stretching), 1639.49 cm^{-1} (C=O stretching), 1406.11 cm^{-1} (C-O-H bending), 1271.09 cm^{-1} (C-H bending), 1045.42 cm^{-1} (C-O stretching), 875.68 cm^{-1} (AgNPs-H) and 705.95 cm^{-1} (AgNPs-Halogen). Based on the characterization with the Particle Size Analyzer (PSA), *M.tanarius*/AgNPs is known to have a particle size of 70.10 nm.The results of the clear

zone test showed a fairly good inhibitory activity against E.coli and S.aureus. The average clear zone diameters for the two test bacteria were 4.0 mm and 2.50 mm, respectively. **Conclusion:** Overall, the results of this work illustrate the potential of the M.tanarius plant to be applied and developed as an antibacterial drug in the future.

Keywords: M. tanarius, AgNPs, metal-organic frame work, clear zone test, inhibitory activity

Magnetic Properties of Sustainable Chromic Material CuMoO₄

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Abstract

Background and Aims: The phenomenon of chromism, in which the color of a material changes reversibly upon some external stimulus, is a very interesting research topic that is expected to develop into basic research to explore its principle and application research. Especially copper molybdate (CuMoO₄), the focus of this study, is a very interesting copper oxide chromic and magnetic material with thermochromic and piezochromic functions depending on temperature and pressure. The color change of this material provides valuable information about temperature and magnetism without any external energy supply. In other words, this chromic compound is a candidate for sustainable materials.

Methods: In this presentation, we introduce the magnetic properties of CuMoO₄ using many kinds of experimental techniques. We have observed a colossal temperature hysteresis phenomenon and magnetic phase transitions originating from the structural change that is the origin of chromism by macroscopic and microscopic measurements in a wide range of temperature and magnetic fields using high-quality powder and single-crystal samples. In particular, the magnetization measurements under extreme conditions showed unique magnetization processes, such as the magnetic anomalies observed in powder samples due to the

magnetic structure of antiferromagnetic dimers, which did not appear in single-crystal samples. **Results:** We think the difference in the magnetization process of CuMoO₄ with different grain sizes is due to the spontaneous crush caused by the considerable volume reduction that occurred during the structural phase transition. **Conclusion:** We also report the synthesis of CuMoO₄ by microwave heating, which is expected to be a novel inorganic material synthesis technique.

Keywords: Chromism, Magnetism, Size-effect, Microwave Heating

Performance Of Cocoa Shell Waste Hybrid Bio-Coke Injected Bio-Oil Using Pyrolysis and Liquid-Solid Mixing Method

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Abstract

Background and Aims: Reserves of the main energy source, namely fossil energy, are currently experiencing a decline due to increasing demand for both industry and transportation. Therefore, renewable energy sources are needed to anticipate this problem. One of the most abundant sources of renewable energy is cocoa shell (CS). There are approximately 467,110 tons/year of cocoa shell waste which can be used as an alternative energy source. CS waste can be used to produce solid fuel in the form of hybrid bio-coke which has a calorific value equivalent to conventional coke. **Methods:** Hybrid bio-coke is produced using the pyrolysis and liquid solid mixing (LSM) method at temperatures of 400°C, 500°C, and 600°C and bio-oil concentrations of 10%, 20%, and 30%. The performance of hybrid bio-coke of CS was determined through analysis of ultimate parameters and heating value. **Results:** The research results showed that the best performance of hybrid bio-coke was obtained at a pyrolysis temperature of 600°C with a bio-oil composition of 30% with ultimate values (ash, S, C, H, N and O) of 6.80%, 0.13%, 66.56%, 4.18%, 0.44% and 21.92% respectively. The calorific value of hybrid bio-coke of cocoa shells obtained at 7,006.56 cal/g for 10% bio-oil concentration, 7,044.78 cal/g for 20% bio-oil concentration and 7,094.78 cal/g for 30% bio-oil concentration.

Conclusion: The performance increase in the calorific value of hybrid bio-coke injected bio-oil was obtained that is 19.82% for a bio-oil concentration of 10%, 20.48% for a bio-oil concentration of 20% and 21.33% for a bio-oil concentration of 30%. The calorific value of hybrid bio-coke injected bio-oil has almost the same values of conventional coke, namely 7,500 cal/g to 8000 cal/g.

Key words: calorific value, cocoa shells, liquid solid mixing, pyrolysis, ultimate

Performance Powder Residual Distillation from Fermented Cocoa skin (*Theobroma cacao* L.) as an Adsorbent For metal Chromium (Cr^{3+}), Iron (Fe^{3+}) and Lead (Pb^{2+})

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Abstract

Background and Aims: In this research, which is used as an adsorbent powder obtained through hydrolysis, fermentation and distillation of cacao fruit skin. This study aims to determine the ability of the cacao fruit skin powder to adsorb metal ions chromium (Cr^{3+}), iron (Fe^{3+}) and Lead (Pb^{2+}) with adsorbent mass variation. **Methods:** Adsorption is done on metal chromium (Cr^{3+}), iron (Fe^{3+}) and lead (Pb^{2+}) with three variations of the adsorbent mass of 0.25, 0.50 and 0.75 grams. **Results:** The results showed that the performance of cacao fruit skin powder the most effective to metal ions lead (Pb^{2+}) with percent adsorption 97.70%, for metal ions iron (Fe^{3+}) with percent adsorption 94.33%, and crom (Cr^{3+}) metal ions with the percent adsorption was 89.71% with adsorbent mass of 0.75 grams.

Keywords: residual distillation, adsorbent, feremented cocoa

Petrographic Alteration Analysis on Prospects Mineralization of East Palu Poboya, Central Sulawesi Province

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Abstract

Background and Aims: The Poboya area is one of the areas that contains gold mineralization. Mineralization at Poboya is predicted to be a low sulfidation epithermal gold system from metamorphic rocks. Indications of mineralization can be seen from the contact of metamorphic rock with side rock which produces an area of altered rock. The aim of this research is to analyze altered minerals from the source rock to determine the type of mineralization that occurs in the area. **Methods:** This research was carried out by taking 22 rock samples, 16 samples were taken by hand specimens from outcrops from the Hill Reef 1, Hill Reef 2 and River Reef locations. Meanwhile, the other 6 examples are coring results obtained from the River Reef location. Samples will be coded and carried out using petrographic analysis to determine the type of altered minerals and rocks. **Result:** based on the results of petrographic analysis, it was found that most of the samples were taken from calcite - quartz veins. Some rocks consisting of granitic and metamorphic schist rocks are cut by calcite - quartz veins. Several minerals that characterize rocks such as orthoclase, plagioclase, hornblende and biotite are present in the rock samples. Meanwhile, alteration minerals consist of clay, gypsum, epidote, iron oxide, alunite and chlorite. **Conclusion:** The mineralization

zone in the Poboya area has a type of low sulfide epithermal mineralization. This indication is proven by the discovery of alteration minerals and the alteration zones resulting from sample analysis are known to be propylitic, advanced argillic, silicification and carbonate-silica zones.

Keywords: Alteration mineral, Epithermal gold system, Petrographic analysis

Photodegradation of Methylene Blue in the BaTiO₃@GO System with Microwave Activation

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Abstract

Background and Aims: Global population growth and advanced industrial development have significantly increased the energy demand. A large amount of wastewater containing dye pollutants is one of the problem in the term of sustainability development issue. **Methods:** The catalytic processes can be used to remove pollutants from wastewater streams. The use of piezocatalysis and photocatalysis for waste water treatment became an attractive issue. **Results:** We report an initial result of piezo- photocatalysis of BaTiO₃@graphene oxide (GO) synthesized by solid state method under the microwave radiation. BaCO₃ and TiO₂ is the precursor of BaTiO₃. The BaCO₃ and TiO₂ (BT) are mixed under ball-milling process for 24 h. The BT@GO without sintering has shown a good performance for reduction of MB up to 70.9% using 15% of GO content. **Conclusion:** This result will be compared with the piezo-photocatalysis the complete BaTiO₃@GO under microwave heating for 15 minutes at low energy (~300-600 watt). **Keywords:** Barium Titanate, Graphene Oxide, Methylene Blue, Piezo-Photocatalysis, Microwave Radiation

Plastic Waste into Hydrogen and CNTs for Sustainable Renewable Energy by Microwave Irradiation

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Abstract

Background and Aims: Indonesia has been identified as the fifth largest waste-producing country in the world as of 2020, according to a report by the World Bank called The Atlas of Sustainable Development Goals 2023. The report states that Indonesia generated approximately 65.2 million tons of waste during the same year. The way Indonesia handles plastic waste has a negative impact on the environment. Most plastic waste is either dumped in landfills or burned in open spaces, leading to harmful carbon emissions. Plastic materials generally consist of Carbon and Hydrogen bonds that form long polymers so that they have the potential to be converted into environmentally friendly energy with proper methods. Hydrogen is widely recognized as a green energy substitute for gasoline, as its combustion into energy does not produce carbon emissions that can harm the environment. Therefore, it is considered as a key energy source for the future. Furthermore, carbon nanotubes are advanced materials that are expensive due to their fabrication complexity. So, more efficient fabrication methods are currently under investigation. **Methods:** In this study, we provide an environmental carbon emission-free

method for the production of Hydrogen and Carbon nanotubes from plastic waste. By using iron-based catalysts and microwave irradiation as a heating source, the conversion of plastic waste into hydrogen and carbon nanotubes can be carried out. Iron-based catalysts have been tested on various types of plastic waste, including HDPE, PVC, Nylon, PET, and PC. **Results:** The findings demonstrate the potential of several types of plastic waste to be utilized as a source of Hydrogen gas and CNT materials. For HDPE type of plastic in particular, the hydrogen concentration produced was measured to be 96% by Gas Chromatography and the presence of residual Carbon Nanotube material was confirmed by SEM and Raman spectroscopy. **Conclusion:** This innovative method offers a promising solution to the plastic waste problem while offering a sustainable energy alternative. The development of this method has the potential to solve the problem of plastic waste not only in Indonesia but also around the world.

Keywords: Microwave Heating, Plastic Waste, Hydrogen, CNTs, Renewable Energy

Profile of Phytochemical Compounds, Antioxidants and Acute Toxicity of 70% Ethanol Extract of Pacikala Seeds (*Etlingera elatior* (Jack) R.M. Smith) From The North Kolaka, Indonesia

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Abstract

Background and Aims: Pacikala (*Etlingera elatior* (Jack) R.M.Smith) is a plant species in the ginger family (Zingiberaceae) which is used as a cooking spice or acid substitutes by the people of North Kolaka, Southeast Sulawesi Province. However, scientific knowledge about this plant is still lacking, both in terms of chemical content and biological activity. **Objectives:** Identify the phytochemical compound profile and to determine the antioxidant activity of the 70% ethanol extract of *E.elatior* seeds. **Methods:** Screening for phytochemical compound profiles, DPPH antioxidant activity tests using dot-blot staining and spectrophotometry UV-Vis. **Results:** The 70% ethanol extract contains flavonoid compounds. The 70% ethanol extract has antioxidant activity which is indicated by a change in the color of the TLC plate from purple to yellowish white. The 70% ethanol extract of *E. elatior* seeds has the potential to capture DPPH free radicals with an SC50 value of 18.26 µg/mL when compared with ascorbic acid (SC50 10.2 µg/mL). **Conclusion:** The 70% ethanol extract of *E. elatior* seeds have the potential to be a natural source

of antioxidant agents. The results of this study support the use of *E. elatior* seeds in the development of nutraceuticals and pharmaceutical raw materials.

Keywords: Acute toxicity, Antioxidants, *Etingera elatior*, Pacikala, Phytochemical

Roasting-leaching Assisted Microwave Irradiation for Nickel Extraction

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Abstract

Background and Aims: In recent years, the use of batteries to store energy has rapidly progressed toward the realization of a carbon-neutral society. Nickel, which has been used as a material for stainless steel, is currently attracting attention as a high-efficiency battery material. On the other hand, currently, a lot of carbon is used in the refining of nickel. Leaching method is a promising method for extracting nickel without producing CO₂ gas emissions. **Methods:** In this study, nickel was extracted by leaching method using water at room temperature. In order to achieve this processing with less environmental impact, it is necessary to not only convert the energy required for roasting into electricity, but also to study for more efficient methods. Microwave heating is considered to be one method that can meet these demands. It has been reported that using microwave heating increases the diffusion effect. Therefore, we used microwave heating in the nickel leaching method to verify whether it could have an effect on promoting diffusion. The process was carried out by roasting a H₂SO₄ and nickel laterite ore mixtures (0.8 mL/g)

using a microwave. The effects of microwave power in this experiment is investigated. The concentration of nickel in sample solution is analyzed by AAS (Atomic Absorption Spectroscopy). **Results:** The highest nickel extraction rate (94.7 %) was obtained when the microwave duty ratio was 80% for 30 minutes. This result shows that by using the microwave heating method, it is possible to extract the same amount of nickel in one quarter of the time compared to using the conventional heating method. **Conclusion:** Nickel leaching methods combined with microwave roasting are thought to be useful in realizing processes with less environmental impact. The effects of microwave power on the roasted nickel extraction will be reported and discussed on the same day.

Keyword : Nickel, Microwave, Roasting-Leaching

Study on Cobalt Deposit Indicator Deducted from the Big Data of Nickel Laterite Ores in Southeast Sulawesi Area

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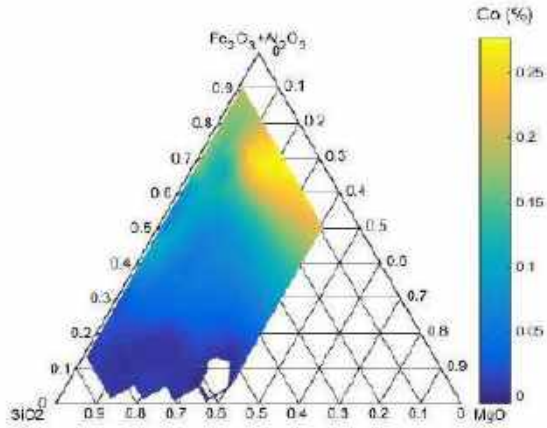
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Abstract

Background and Aims: Cobalt has become a major component of Li-ion batteries along with nickel, manganese and aluminium. It is commonly found in lateritic nickel-cobalt deposits, often associated with nickeliferous laterites. We have collected and analyzed more than one thousand nickel laterite samples taken from various regions in Southeast Sulawesi, Indonesia. The nickel content varies from very low levels ($\sim 0.1\%$) to high levels of 3.0%. The maximum cobalt content is 0.196%. At present, nickel content is always a major concern in the mining process. Therefore, finding a quick way to guess cobalt levels is important to increase the economic value of mining products. It is also important to explore the potentiality of cobalt recovery from nickel laterites which is still not considered by the industry at present time. The statistical analysis will be involved to find the easy indicator of cobalt existence in the nickel ores. The geochemical and the

geological constraints contained in the data will also be discussed. Figure shows an example of cobalt indicator based on AlFe-Si-Mg ternary phase diagram.



Keywords: Nickel laterites, big data, statistical analysis, geochemical constraint

Study on Utilization of Empty Fruit Bunches of Oil Palm to Synthesis Carbon Nanodots

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Abstract

Background and Aims: Carbon nanodots (CND) were successfully synthesized using empty fruit branches (EFB) of palm oil as source of carbon in two different ways by hydrothermal method. The aim of study is synthesized and characterized of CND from EFB usin. **Methods:** The first way, EFB was directly carbonized which was then synthesized into CND (CND-1) whereas in the second way, cellulose was isolated from EFB which was then synthesized into CND (CND-2). The CNDs were characterized by Fourier Transform Infrared (FTIR), X-Ray Diffraction (XRD), Particle Size Analyzer (PSA), and UV-Vis. The FTIR spectra show the new peaks at around 1650 cm⁻¹, 1534 cm⁻¹ and 1429 cm⁻¹ that indicated structure of CND. The XRD pattern shows the typical characteristic of amorphous lignocellulosic at $2\theta = 22.6^\circ$ and broad peak at $2\theta = 24^\circ$ is attributed to the diffraction pattern of graphitic carbon of CND. **Results:** Experimental results show that the synthesized CNDs have average size 5 nm (CND-1) and 2 nm (CND-2) in diameter with narrow size distribution. Under irradiation at 365 nm, both CNDs solution exhibits a bright-blue color indicating the strong blue, fluorescent property of CND. The UV-Vis spectra of CNDs showed the peak at 280 nm and 340 nm. The peak at 280 nm is ascribable to the $\pi - \pi^*$ transition for the C=C bond and the peak at 340 nm is ascribable n - π transition of the C=O and N-H groups. The resulting carbon nanodots have slight differences in particle size and optical properties. **Conclusion:** The characteristic

and properties of CND depend on the method that used to synthesize CND.

Keywords: carbon nanodots, EFB, hydrothermal

Synergistic Approach for Visible Light-Driven Electrochemical Photodegradation of Methyl Red Using Reduction Graphene Oxide Supported TiO₂ Nanoparticle

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Abstract

Background and Aims: Contamination of dyes such as methyl red in the aquatic environment causes numerous problems. Therefore, it is necessary to develop a novel catalyst that can quickly, accurately, and effectively eliminate dye contaminants. **Methods:** In this study, we report the successful preparation of a new candidate electrode, the rGOps-TiO₂ composite, via a hydrothermal method. The palm shell was obtained from Kolaka Regency in Southeast Sulawesi, Indonesia, and was used as precursor rGO. Additionally, the electrodes were characterized using X-ray diffraction, spectroscopic techniques such as FTIR, and microscopic techniques such as SEM-EDX to ensure the synthesis of the prepared electrode material. Moreover, the photo-electrocatalytic degradation of methyl red dye was conducted using MultiPulse Amperometry (MPA) with a potential bias of 0.5 V, a 15-watt UV lamp with irradiation of 360 nm, and visible light of energy 18 Watts from a Xenon lamp. The photocurrent response indicated that the rGOps-TiO₂ electrode exhibited higher visible light absorption compared to the undoped rGOps. **Results:** The degradation efficiency of methyl red reached 90.04% in the UV irradiation-assisted photo-electrocatalytic process, which was significantly different from the efficiency achieved under visible light irradiation, which was 94.78%. Therefore, the photo-electrocatalytic (PEC) technique based on rGOps-TiO₂ showed

much higher degradation efficiency for methyl red compared to the photocatalytic (PC) technique. **Conclusion:** This suggests that PEC holds promise for the treatment of dye wastewater in aquatic environments.

Keywords: Catalytic degradation, methyl red, photo-electrocatalysis, rGOps-TiO₂ electrode, synthetic dye

Synthesis And Characterization Of CaO/K₂O Catalysts And Its Application In The Used Cooking Oil Biodiesel

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Abstract

Background and Aims: The high CaCO₃ content in purebred chicken egg shells can be synthesized into a catalyst with high alkalinity for the process of making biodiesel. This study aims to determine the effect of variations in catalyst concentration and reaction time on the quality and quantity of used cooking oil biodiesel. **Methods:** CaO/K₂O catalyst was synthesized by calcination method at 1000°C for 3 hours and impregnated using KOH solution. The catalyst was then characterized using X-Ray Diffraction (XRD) and Scanning Electron Microscope (SEM). The catalyst was then applied to the conversion of used cooking oil into biodiesel with variations in reaction time and catalyst concentration with an oil : methanol ratio of 1 : 2 and a reaction temperature of 65°C. The synthesized biodiesel was then analyzed for the yield formed, kinematic viscosity, acid content, and water content. **Results:** The results showed that the CaO/K₂O catalyst has a high basicity with pH of 13 and a high crystallinity with a cubic crystal form. Used cooking oil biodiesel shows result kinematic viscosity and acid content met the requirements according to national standards, while the water content did not and the best yield result were obtained at variations in catalyst concentration of 5% and reaction time of 2 hours. **Conclusion:** The conclusion was that a reaction time of 2 hours and a catalyst concentration of 5% produced a better yield. The effect of the length of reaction time on the characteristics of biodiesel is that the longer the reaction time, the higher the kinematic viscosity and

acid content. Meanwhile, the yield and water content decreased. The high catalyst concentration increases the acid content and lowers the kinematic viscosity of biodiesel.

Keywords: Biodiesel, CaO/K₂O Catalyst, Eggshell, Used Cooking Oil.

Synthesis of Molybdenum Doped Tin Oxide as Electron Transport Material in Perovskite Solar Cell

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Abstract

Background and Aims: The development of perovskite solar cells (PSC) is a prominent focus within the field of solar cell applications. In this context, tin oxide (SnO₂) doped with Molybdenum (Mo) serves as a crucial electron transport material (ETM) aimed at enhancing PSC performance. This study was aimed at investigating of characteristics and performance of a novel electron transport layer (ETL) for PSC, derived from the doped synthesis of Mo-SnO₂ as the ETM. **Methods:** The ETL preparation for Mo-SnO₂/FTO involves synthesizing Mo and SnO₂ with sonication, and subsequently, the fabrication process using the spin-coating method. **Result:** the performance of ETL Mo-SnO₂/FTO surpasses that of ETL SnO₂/FTO. The assessment of Mo-SnO₂ effectiveness as an ETL is conducted through x-ray diffraction (XRD) and field-emission scanning electron microscopy (FESEM), revealing distinct peaks at 2θ angles of 36.57 (512), 41.51 (412), and 44.04 (314) degrees, accompanied by a layer thickness measuring 46.89 nm. The performance of PSCs employing ETL Mo-SnO₂/FTO is quantified through critical metrics, including open-circuit voltage (V_{oc}), short-circuit current density (J_{sc}), and fill factor (FF). **Conclusion:** the highest power conversion efficiency achieved is 7.33%, with V_{oc} at 0.89 volts, J_{sc} at 16.92 mA/cm², and FF at 5.67%. These findings demonstrate that PSCs incorporating Mo-SnO₂ as the ETM hold promise as a model for

enhancing the performance of perovskite solar cells in ETL platforms.

Keywords: PSC, SnO₂, Mo, ETL, Efficiency

The Acceleration of Ion Conductivity without Supporting Electrolyte in Iodine-Iodide Redox Reaction

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Abstract

Background and Aims: In electrochemical cells, such as dye-sensitized solar cells (DSSCs), ion-containing electrolytes are utilized to facilitate charge transport between two electrodes, taking advantage of iodine redox reactions in acetonitrile. This approach offers several advantages: high charge transport capability; reduced recombination, which fosters high photovoltaic efficiency; and high solubility. Despite these advantages, several fundamental questions in electrochemistry remain, including the potential decrease in a compound's activity (and thus its charge transport capability) at high solubility, the complexity of iodine redox reactions despite their simple chemical composition, and the ability to reduce excited dyes on titanium dioxide porous interfaces while controlling recombination. **Methods:** To address these questions, we conducted cyclic voltammetry (CV) measurements using platinum disk electrodes (1.6 mm and 0.1 mm in diameter) in acetonitrile with varied concentrations of lithium iodide and supporting salts. **Results:** Our findings indicate that at supporting salt concentrations of 100 mM or higher, the diffusion coefficient of iodine is $1.4 \times 10^{-5} \text{ cm}^2/\text{s}$, aligning with the literature. Additionally, a larger diffusion coefficient is suggested at supporting salt concentrations below 50 mM, which can be achieved by increasing lithium iodide concentration or reducing the supporting salt concentration. Notably, a diffusion coefficient of $9.7 \times 10^{-5} \text{ cm}^2/\text{s}$ was confirmed under conditions of 100 mM lithium iodide without supporting salt, using a 0.1 mm diameter electrode. **Conclusion:** These results elucidate that iodine ions

diffuse through the Grotthuss mechanism, known for facilitating a mechanism similar to proton jumping, which is inhibited by counter anions. Moreover, this charge transport suggests acceleration not only through ion conduction but also through intramolecular charge transfer in iodine ions. Our research reveals that, due to its simple composition, high concentrations of lithium iodide enhance the diffusion coefficient in the DSSCs electrolytes.

Keywords: a small disk electrode in electrochemistry, redox reaction of iodine, Grotthuss mechanism

**The Compounds profile of local plant Susube
(*Meistera aculeata* (Roxb.) Skornick. & M.F.Newman)
family Zingiberaceae from Konawe Regency,
Southeast Sulawesi**

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Abstract

Background and Aims: *Meistera aculeata* (Roxb.) Skornick. & M.F.Newman is a species from the zingiberaceae family that grows in Southeast Sulawesi, especially in Konawe district and is known by the local name "susube" (Tolakinese). This susube plant is endemic, the fruits is consumed and used as a cooking spice by natives. Until today, study of the compound content in this plant has yet investigated, especially in the fruit. Hence, this research aimed to identify the compounds in the fruit of this plant. **Methods:** The compounds were identified in the methanol extract of susube fruit using the liquid chromatography tandem-mass spectrometry (LC-MS/MS) method. **Results:** The identified compounds are Arecatannin A1 (C₄₅H₃₈O₁₈, m/z 867.2129), Catechin-(4 α -8)catechin (C₃₀H₂₆O₁₂, M/z 579.1499), d-Catechin (C₁₅H₁₄O₇, m/z 291.0861), Quercetin (C₁₅H₁₀O₇, m/z 303.0502), and one candidate compound (C₃₁H₄₇NO₄, m/z 520.3396). From the identification results of the methanol extract of susube fruit using the LC-MS/MS method, data was obtained that the structures of four compounds were known, namely Arecatannin A1, Catechin-(4 α -8)catechin, d-Catechin and Quercetin. These

compounds come from the flavonoid secondary metabolite group. Meanwhile, the structure of one compound is unknown. Flavonoids are natural compounds that are found in many plants and have various pharmacological activities such as antioxidant, antimicrobial, anticancer, antiviral and anti-inflammatory. **Conclusion:** The four compounds whose structures are known were first reported to have been identified in the methanol extract of susube fruit (*Meistera aculeata* (Roxb.) Skornick. & M.F.Newman). Thus, these findings indicate that susube fruit extract (*Meistera aculeata* (Roxb.) Skornick. & M.F.Newman) has great potential to proceed to the stage of pharmacological analysis and isolation of pure compounds.

Keywords: Flavonoid; LC-MS/MS; *Meistera aculeata*; Susube; Zingiberaceae

The Effect of Pasteurization Temperature and Ultraviolet Irradiation on Total Microbes and Organoleptics of Packaged Old Coconut Water (*Cocosnucifera L*) Waste

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Abstract

Background and Aims: Coconut water waste is quite abundant in Indonesia so that a lot of coconut water is wasted, so efforts need to be made to optimize the manufacture of food products from coconut water, so that it is not wasted, potential needs and as an alternative to drink such as coconut water syrup, soy sauce, jelly. Coconut water has good nutritional value for humans. This research aims to determine the effect of heating temperature and radiation on the physical, chemical and organoleptic properties of coconut water, as well as on the total microbial properties of coconut water. **Method:** This research was carried out based on a Randomized Block Design (RAK) with a factorial pattern where the first factor was heating temperature (temperature 800C, temperature 90 0C, and temperature 1000C) and the second factor was irradiation power (irradiation number and irradiation 40 watts) . The variables observed were sensory assessment, physical characteristics and total microbes of coconut water. The data analysis used is (ANOVA). If the results of the analysis have a real effect, it is continued with the Duncan's Multiple Range Test (DMRT) with a confidence level of 95%. **Results:** The results showed that the sensory assessment chosen by the panelist was treatment B1P3 (lighting 40 watts and temperature 1000C) with an average score of 4.08 (liked), color 3.80 (somewhat liked) and liked 4.07 (Like).The coconut water product in the treatment had an acidity value of 4.22%, a viscosity of 1.28% and a microbial count

of 2060. **Conclusion:** Based on the research results, it can be concluded that the pasteurization temperature and Ultra Violet irradiation power have a real influence on the packaged coconut water product in the best treatment. S2L2 (heating temperature 1000C for 25 minutes) has organoleptic values which include color with an average of 4.02 (somewhat like), aromatic with an average of 3.95 (somewhat like), and taste with an average of 4.01 (like).

Keywords: Coconut water, Heating temperature, Irradiation power, Sensory value, Total microbes

The Effect Of Soaking Sodium Bisulfite ($\text{Na}_2\text{S}_2\text{O}_5$) At Different Concentrations On Acceptability And Chemical Characteristics Of Skipjack Fish Cookies (Katsuwonus Pemis)

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Abstract

Background and Aims: One of the problems caused by skipjack fish is the brownish color (Browning) that occurs in skipjack fish meat. The addition of sodium bisulfite $\text{Na}_2\text{S}_2\text{O}_5$ which is increasing will inhibit the browning reaction better so that the degree of whiteness can increase. The purpose of the study was to determine the effect of soaking sodium bisulfite ($\text{Na}_2\text{S}_2\text{O}_5$) at different concentrations on the acceptability and chemical characteristics of skipjack fish cookies (Katsuwonus Pelamis).

Method: This study used pre-experimental research with a complete randomized design (RAL). It will be held from May 14-17, 2023 at the IBM Lab laboratory of the Kendari Health Polytechnic campus then continued with a taste test on May 24, 2023 at the Kendari Health Polytechnic Taste Test Laboratory using 30 student panelists. The data collected is in the form of organoleptic quality data using organoleptic test forms and chemical composition measurements collected in the form of descriptive data consisting of protein levels (kjeldahl method), fat levels (soxhlet method). Carbohydrate content (luff schoorall method), water content (gravimetry) and sulfite levels (spectrophotometry) data analysis was carried out using the Kruskal-walls test to see if there was a difference in skipjack fish cookies products. **Results:** Data analysis showed that panelists' acceptance of 3 treatments of skipjack fish cookies products did not

show a significant difference even though in percentage terms there were differences based on color attributes of skipjack fish cookies F2 had the highest percentage (73.3%), panelists' acceptance based on aroma attributes of the very like category F2 had the highest percentage (73.4%), panelists' receipts based on taste attributes of the very like category F2 had the highest percentage (70%), Panelists' acceptance based on texture attributes of the category really likes F2 has the highest percentage (60.0%), then F2 products have a nutritional content of protein 6.90 g, fat 8.90 g carbohydrates 25.80 g, water content 4.10%. and sulfite levels < 0.01%. **Conclusion:** For further research, research should be conducted on the length of soaking sodium bisulfite and different concentrations of skipjack fish cookies. It is expected that people can consume skipjack fish cookies products, besides being most preferred, this product also has high nutritional content, especially carbohydrates that are good for liver disease.

Keywords: skipjack fish cookies, acceptability, nutritional content

Voltammetric detection of ozone-dissolved water at a TiO₂-coated FTO electrode

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Abstract

Background and Aims: Ozone has the second-highest oxidation potential after fluorine, allowing ozone-dissolved water to sterilize bacteria. An ozone-dissolved water generator is suitable for home food sterilization. However, ozone's brief lifespan limits its stable supply. Therefore, it's crucial to check the concentration of ozone before use. **Methods:** In this study, we demonstrated the ability to quantify ozone concentration using a TiO₂-coated FTO electrode obtained by sintering, similar to those used in wet-type solar cells. Titanium oxide, being an n-type semiconductor, sees its conductivity change based on the applied reduction potential. By utilizing an ozone-inert FTO electrode and varying the titanium oxide layer's thickness, we examine the ozone reduction current's voltammogram representation. Detecting ozone necessitates specific conditions to prevent oxidation of the electrodes, cell container, and salt. This research elucidates these conditions. **Results:** The electrochemical cell was of a single compartment type, using a TiO₂ on FTO electrode as the working electrode, a Pt coil as the counter electrode, and Ag/Ag⁺ as the reference electrode. The solution was a neutral aqueous solution containing 0.05 M Na₂SO₄, and ozone gas generated by silent discharge was bubbled into it. This solution contains both oxygen and ozone. The titanium oxide electrode could distinguish between oxygen and ozone by their reduction potential. When detecting the reduction current of ozone with the titanium oxide electrode, a reduction current originating from ozone was detected around $-0.2\text{V} \sim -0.5\text{V}$ vs. Ag/Ag⁺. **Conclusion:** The low reduction potential with excess potential is due to the thickness of the TiO₂ layer. When the

thickness of the TiO₂ layer was reduced, it was found that titanium oxide could be detected most efficiently when its thickness was around a few nanometers.

Keywords: ozone-dissolved water, TiO₂-coated FTO electrode, home food sterilization

Section Food Security and Sustainable Health

Acceptability and Nutritional Content of Citebu (Cilok Anchovies and Purple Sweet Potatoes) as Healthy Snacks in Stunted Toddlers Aged 24-59 Months

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Abstract

Background and Aims: Stunting is defined as a chronic nutritional problem in children characterized by measurement of body length or height of less than -2 SD whose causes are very complex. One of the stunting that can be done is to improve children's consumption, including snacks. In this study, an innovative children's snack product in the form of cilok was made with the addition of anchovy paste which has a high protein and calcium content and purple sweet potato paste which contains anthocyanin pigments so that it can create a special attraction for the appearance of cilok and was named Citebu. The improvement of this snack is done to increase its nutritional value. This snack is given to the target, namely children under five aged 24-59 months in the working area of the Lambuya Health Center, Konawe Regency. This study aims to examine the acceptability of Citebu and the nutritional content of Citebu and the requirements of Citebu as the fulfillment of PMT for Toddlers aged 24-59 months.

Methods: This type of research is a pre-experimental research with a one shot case study design. It will be held on February- March 2022. The target in this research is stunting toddlers aged 24-59 months with a total of 30 children acting as panelists. The acceptability test was carried out in the working area of the Lambuya Health Center and the nutritional content test was carried out at the Biology Laboratory, FMIPA, Haluoleo University.

Results: Based on the results of the acceptance test, the

panelists' acceptance of Citebu with the highest level of preference was Formula 5 with a score of 4.0 (< 0.005). The nutritional content in 100 grams of Citebu which was tested in the laboratory contains energy = 434.6 kcal, protein = 21.27 grams, fat = 2.95 grams, carbohydrates = 11.78 grams, and calcium = 112.07 mg. **Conclusion:** The Citebu product in Formula 5 became the Citebu formula with the highest acceptance by panelists who were 24-59 months in the work area of the Lambuya Health Center. The number of Citebu that can be consumed as a distraction/PMT for children in a day is 2 pieces of Citebu with a weight of about 30 grams. In 100 grams of Citebu, it contains energy = 434.6 kcal, protein = 21.27 grams, fat = 2.95 grams, carbohydrates = 11.78 grams, and calcium = 112.07 mg.

Keywords: Anchovy, Cilok, Purple sweet potato, Stunting

Application of Diabetic Foot Exercises on Sensitivity Feet in Type 2 DM Patients at Kolaka Health Center

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Abstract

Background and Aims: DM is a metabolic disease caused by high blood sugar levels. Patients suffering from type 2 DM will experience complications such as decreased foot sensitivity. Sensitivity is a person's ability to feel stimulation. One way to increase the patient's foot sensitivity is by providing foot exercise therapy which can help improve blood circulation and also strengthen small muscles. This study aims to obtain a general overview of the application of diabetic foot exercises to foot sensitivity in type 2 DM patients at the Kolaka 2 Community Health Center. **Methods:** This study uses a descriptive research design which includes the assessment of one research unit, for example one patient, family, group and agency. The sample used was 2 respondents. **Results:** The two respondents had different levels of foot sensitivity in Mrs.Y, when the first examination was carried out, the client's foot sensitivity was 5/10 on the right foot and 7/10 on the left foot, increasing to 8/10 on the right foot and 8/10 on the left foot, while Mrs.N carried out the first examination and found that the level of foot sensitivity in the right foot was 5/10 and the left foot was 4/10, increasing to 9/10 in the right foot and 8/10 in the left foot. After performing diabetic foot exercises for 3 days, there was an increase in foot sensitivity in diabetes mellitus patients. **Conclusion:** Diabetes mellitus sufferers and their families are advised to regularly do diabetic foot exercises to increase the sensitivity of the patient's feet.

Keywords: Diabetic foot exercises, foot sensitivity, Type 2 DM

Application of Low Impact Aerobic Exercise on The Blood Pressure of Women With Hypertension in The Working Area of Kolaka Puskesmas

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Abstract

Background and Aims: Hypertension is a condition where blood pressure increases with pressn systolic >140 mmHg and diastolic >90 mmHg. Hypertension or what is often known as the silent killer because hypertension can usually occur without any complaints or symptoms. Research purposes describe Application of low impact aerobic exercise on blood pressure in women suffering from hypertension in the Kolaka Health Center working area. **Methods:** In this research the author used a descriptive case study type with a case study design about the effect of low impact aerobic exercise on the blood pressure of women with hypertension. **Results:** Based on the results of research that has been carried out, there is a decrease in blood pressure in hypertension sufferers after doing low impact aerobics exercise 6 times with a duration of 15-60 minutes where Mrs. S's blood pressure before doing low impact aerobics was 160/100 mmHg and after doing the exercise it experienced decreased to 140/90 mmHg. Meanwhile, Mrs. F before doing low impact aerobics exercise was 170/100 mmHg and decreased to 140/80 mmHg. **Conclusion:** The conclusion in this research is the effect of low impact aerobic exercise on blood pressure in women with hypertension has decreased.

Keywords: Hypertension, Low Impact Aerobics

Application of SEFT Therapy (Spiritual Emotional Freedom Technique) for Reducing Blood Pressure in Hypertension Patients in The Working Area of Puskesmas Kolaka

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Abstract

Background and Aims: The prevalence of hypertension has increased from year to year. Hypertension generally occurs in the elderly and is one of the main causes of premature death throughout the world. So the aim of the case is to apply SEFT (Spiritual Emotional Freedom Technique) therapy to reduce blood pressure in hypertensive patients. **Methods:** This research design uses a descriptive qualitative method with the study subjects being 2 respondents suffering from primary hypertension, who believe in God Almighty in the late adult category aged 40-60 years. The research was carried out in the working area of the Kolaka health center. **Results:** The research results showed that both respondents experienced primary hypertension with Mrs. T 160/100 MmHg and Mrs. S 150/100 MmHg, then after implementing SEFT therapy for three consecutive days, it showed a decrease in blood pressure in both respondents, Mrs. The conclusion is that the application of SEFT therapy to hypertensive sufferers can reduce blood pressure from stage 1 and stage 2 hypertension to pre-hypertension. **Conclusion:** So it is recommended that this case study can be used as reading material and reference in conducting research and as an alternative for lowering blood pressure without the help of medical drugs.

Keywords: Hypertension, SEFT Therapy, Blood Pressure

Comparison Effect of Watermelon Albedo (*Citrullus Lanatus*) and Honey Pineapple (*Ananas Comosus L*) Against Acceptance, Fiber and Potassium Levels on The Jelly Drink

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Abstract

Background and Aims: In Indonesia, honey watermelons and pineapples are easy to find anywhere, from traditional markets to modern markets. According to the Kendari City Central Statistics Agency (BPS), in 2018 the production of watermelon and honey pineapple in Kendari City was quite abundant. The prevalence of hypertension sufferers in Kendari City is quite high (27.2%). The content of citrulline and potassium found in watermelon rind and honey pineapple can help lower high blood pressure for people with hypertension. This study aims to determine the acceptability, fiber and potassium levels in several comparisons of watermelon rind with honey pineapple in the manufacture of jelly drink.

Method: This research is a pre-experimental research. This research was conducted on July 6 - 10 2023. Starting from making watermelon skin extract, honey pineapple juice and making jelly drink as well as organoleptic tests with 30 panelists. Located in the Food Science Laboratory, Department of Nutrition, Kendari Health Polytechnic. Then measurements of fiber and potassium levels in jelly drink products were carried out using the AAS and gravimetric methods at the Biomolecular and Environmental Laboratory of the Faculty of Mathematics and Natural Sciences, Haluoleo University. After that, data analysis was carried out using the Kruskal Wallis test and descriptive in the form of nasari

and tabulations. **Results:** From the results of the organoleptic test of jelly drink product from watermelon rind with honey pineapple, the treatment that has the highest acceptability with the very like category in terms of the aspects of color, aroma, and taste is the third treatment (P3), namely the aspect of color (81.4%), the aspect of aroma (80.8%) and taste (89.1%). Jelly drink proximate test results for fiber content (0.48 mg) and potassium levels (89.60 mg). **Conclusion:** Based on all the combined attributes of the panelists, they preferred jelly drink in treatment three (P3) with honey pineapple formulation of 15%. The results of the jelly drink proximate test at P3 were fiber content (0.48 mg) and potassium levels (89.60 mg).

Key words: Watermelon Peel, Honey Pineapple, Acceptance, Proximate

Cost-Effectiveness-Analysis Of The Use Of Citicoline And Piracetam Inpatient Ischemic Stroke Patients In The Blud Benyamin Guluh Kolaka Hospital

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Abstract

Background and Aims: Stroke is a disease that is classified as quite high in Indonesia and is a cause of death with the number of hospitalized patients increasing every year. Data from BLUD Benyamin Guluh Kolaka in 2021, stroke is included in the top 10 inpatient diseases, namely 8th with a total of 95 sufferers. Thus causing an increase in the amount of costs that must be borne. Research objectives: to determine the average direct medical costs and to determine the cost effectiveness analysis of the use of citicoline and piracetam in inpatient ischemic stroke patients at the BLUD of Benyamin Guluh Kolaka Hospital. **Methods:** The research used was observational with a non- experimental descriptive research design. Data collection was carried out using a retrospective method using secondary data. Analyzed using the CEA method with parameters Average cost effectiveness ratio (ACER) and Incremental cost effectiveness ratio (ICER) seen from the outcome of length of stay. The sample in this study was 63 patients, of which 34 patients used citicoline therapy and 29 patients used piracetam therapy who were treated in class III treatment rooms. **Results:** show that the average direct medical costs for using citicoline therapy are IDR 1,702,912 and the average direct medical costs for piracetam therapy are IDR. 2,627,362. The ACER value of citicoline therapy is IDR. 2,316,887 and the ACER value of piracetam therapy is IDR. 6.932.35. The ICER value from

the comparison between citicoline therapy and piracetam therapy is IDR. -2. 596,769. **Conclusion:** the most cost-effective therapy is the therapy that has the lowest ACER value, namely citicoline therapy.

Key words: Cost effectiveness analysis, citicoline, piracetam, ischemic stroke

Cross-Disciplinary Collaboration in Training of Crutches Manufacture for Persons with Disabilities Walking Functional

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Abstract

Background and Aims: The urgency of technology for persons with disabilities was quite urgent. Currently, only 30 percent of the number of persons with disabilities have received their right to use assistive devices, one of which was crutches. Provision of crutches can be done by providing training on making crutches to aluminium craftsmen. Cross-disciplinary collaboration is needed. The purpose of this study was to determine the effectiveness of cross-disciplinary collaboration in providing crutches-making training to the knowledge of aluminium craftsmen. **Methods:** This research was a pre-experimental study with one group pre-test post-test design. The population in this study were aluminium craftsmen who had experience processing aluminium for at least 1 year. A sample of 18 aluminium craftsmen were selected using the convenience sampling method. Respondents were given training including health education on how to make crutches and how to walk using crutches. Training was provided through scientific collaboration in the fields of Engineering and Nursing. Data collection was carried out by giving questionnaires to respondents' knowledge about making crutches. This instrument has been tested for validity and reliability (Cronbach's Alpha > 0.8). Measurement of respondents' knowledge was carried out before and after being given. Data analysis used the dependent T test. **Results:** The results of the study showed that cross-disciplinary

collaboration was effective in increasing the knowledge of aluminium craftsmen. The results of the knowledge measurement show an increase in scores on the post-test measurement. Crutches made by craftsmen will be tested on people with functional walking disabilities to see whether their functional abilities increase. **Conclusion:** Relevant scientific cross-disciplinary collaboration can be further enhanced as an effort to improve the quality of life of people with functional disabilities.

Keywords: Collaboration, Cross-disciplinary, Crutches, Disabilities, Training

Description of Foot Care in The Prevention of Diabetic Ulcers In Type II Diabetes Mellitus Patients: A Case Study

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Abstract

Background and Aims: Cases of diabetic ulcers are currently increasing with the continuing increase in the number of sufferers of type II diabetes mellitus. Giving medication cannot completely prevent the occurrence of ulcers, various factors that can cause it, one of which is the patient's own behavioral patterns in caring for body parts such as the feet. Currently the health team must be able to increase preventive and educational information in preventing diabetes mellitus complications in the ulcer area. in the lower extremities continues. One therapeutic management that can be carried out by type II diabetes mellitus sufferers while at home is by implementing healthy behavior such as foot care to prevent ulcers on the lower extremities. The aim of this research is to see an overview of the application of foot care in preventing the occurrence of diabetic ulcers. **Methods:** The design of this research method was carried out using a case study approach on 2 type II diabetes mellitus patients through the nursing care process. **Results:** The results of this study showed that after the foot care intervention was carried out for 3-4 days, it showed that there were objective changes in the feet of both type II diabetes mellitus patients, including better foot hygiene and sensory changes than before, thereby reducing the risk of developing diabetic ulcers. **Conclusion:** Foot care will be one of the patient's independent interventions that can be carried out during home treatment so

that they will be able to prevent complications of diabetic ulcers on the feet of people with type II diabetes mellitus and can provide a better quality of life.

Keywords: diabetes mellitus, ulcers, behavior, management, foot care.

Development of Flip Chart as a Media for Nutrition Education for Prevention of Anaemia in Adolescent Girls at SMA Negeri 6 Kendari

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Abstract

Background and Aims: The prevalence of anaemia is considered a health problem if the prevalence is >15%. Based on the 2012 Household Health Survey (SKRT), it shows that the prevalence of anaemia among adolescent girls aged 10-18 years is 57.1%. Based on the data from Riskesdas (2018), the prevalence of anaemia is found in many female adolescents of 48.9%, meaning that 3-4 out of 10 adolescents suffer from anaemia. This research was conducted due to the unavailability of nutritional education media regarding anaemia for female students as a source of information and nutritional education aids for female students at SMA Negeri 6 Kendari. This study aims to determine the process of developing flip chart media and the results of developing flip chart media for proper and practical anaemia prevention in adolescent girls.

Methods: This type of research uses research and development methods (Research and Development) using the 4-D research and development model (define, design, development, and dissemination) proposed by Thiagarajan. The 4-D research and development model consists of 4 stages, namely: (1) definition, (2) planning, (3) development (4) dissemination/dissemination. The research instrument used was a validation questionnaire and a response questionnaire for adolescents girls, data analysis techniques in this development research are qualitative and quantitative data analysis. The population in this study were students in class X and XI at SMA Negeri 6 Kendari, totalling 334 students and a total sample of 76 students who met the inclusion

criteria and were taken using a proportional random sampling technique by lottery. **Results:** This research produced nutritional education media in the form of flip charts on the material on Prevention of Anaemia in female students at SMA Negeri 6 Kendari. Based on the results obtained, the average score of material experts was 81.25% with valid criteria and 90% of media experts with very valid criteria. The results of the large group trial on adolescent girls on practical flip chart media with a percentage of 82%. **Conclusions:** Overall, it can be concluded that the flip chart media for preventing anaemia among the female students is feasible and practical for use by female, especially for female students in SMA Negeri 6 Kendari.

Key Words: Anaemia, Flip Charts, Nutrition Education Media, Development, Adolescent Girls

Effect of Video-Based Health Education on Diet Compliance of Diabetes Mellitus Patients in Kolaka Regency

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Abstract

Background and aims: Diabetes mellitus is a chronic condition caused by increased blood glucose levels in the body (hyperglycemia) due to the body not being able to produce or use insulin effectively. It is recorded in the International Diabetes Federation (2017) that globally in the world there are around 425 million people or around 8.8% of people who are estimated to have diabetes mellitus. Diabetes mellitus sufferers in the world are increasing from year to year. Compliance with diabetes mellitus patients regarding diet can be improved through health education about the disease and its treatment as well as providing information on how to follow a diet. This study aims to examine the effect of video-based health education on dietary compliance in diabetes mellitus patients in Kolaka Regency. **Methods:** A quasi-experimental study, one group pre-test and post-test was applied in this study. Samples were 36 patients with diabetes mellitus. The video-based health education intervention lasted a total of 60 minutes. The data collected were analyzed using the paired test (α 0.05). **Results:** The results of the study showed that there was an effect of video-based health education on dietary compliance of diabetes mellitus patients in Kolaka Regency with a p value of 0.000. **Conclusion:** Video-based health education has an effect on dietary compliance in diabetes mellitus patients. This intervention can be used as a method for conducting health education so that diabetes mellitus patients are able to apply their own problems and needs, are able to understand what they can do about their

problems, with the resources available to them plus external support, and are able to decide on appropriate activities. appropriate for improving the standard of living.

Keywords: Diabetes mellitus, diet compliance, health education

Effectiveness of Community Based Total Sanitation Program (STBM) on Community Participation in The Improvement of Coastal Area Environment Sanitation in a Lapulu Village

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Abstract

Background and Aims: Community-based total sanitation (STBM) is an approach used to change hygiene and sanitation behavior through community empowerment. There are still some people in the village of lapulu who have not implemented STBM. The purpose of this study was to analyze the effectiveness of the Community-Based Total Sanitation Program (STBM) on Community Participation in Improving Environmental Sanitation in Coastal Areas in Lapulu Village, Kendari City, Southeast Sulawesi Province. **Methods:** The design of this research is cross sectional. **Results:** The results of the study show that there is a relationship between facilities and infrastructure with the effectiveness of the STBM program strategy on community participation in improving environmental sanitation in coastal areas in Lapulu Village. There is a relationship between the socialization process and the effectiveness of the STBM program strategy on community participation in improving environmental sanitation in coastal areas in Lapulu Village. There is a relationship between the target and the effectiveness of the STBM program strategy on community participation in improving environmental sanitation in coastal areas in Lapulu Village. **Conclusion:** The effectiveness of the STBM program strategy from the aspect of infrastructure facilities, aspects of the socialization process, aspects of targets for community participation in improving environmental sanitation of coastal areas in Lapulu Village, Kendari City, Southeast Sulawesi Province, there is a significant

relationship. Through statistical test results. It is hoped that there will be improvements to the program to improve the environmental health of coastal areas.

Keywords: Environmental Sanitation, Infrastructure, Socialization, Target

Effleurage Masasse Combination of Olive Oil in Improving Skin Integrity in Non-Hemorrhagic Stroke Patients

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Abstract

Background and Aims: Patients with non-haemorrhagic stroke experience various limitations in their activities, especially in their mobilization needs. Impaired physical mobility is a major limitation due to neurovascular injury to the brain which innervates motor function. This disease can cause more extensive damage due to immobilization that occurs in bed for a longer period of time. Complications that can occur are damage to skin integrity due to disrupted circulation due to prolonged pressure. Maintaining skin circulation in non-haemorrhagic stroke patients is very important to prevent complications from pressure ulcers due to prolonged bed rest. Providing the effect of dilating blood vessels with massage is a concern in maintaining skin circulation to avoid injury. The aim of this study is to describe the application of effleurage massage with a combination of olive oil in maintaining skin integrity in patients with non- haemorrhagic stroke. **Methods:** This research method was carried out using a case study approach on 2 non-haemorrhagic stroke patients through the nursing care process. **Results:** The results of the research on both patients described changes in skin integrity after the intervention where the skin condition became more moist, supple, smooth and warm. Changes in skin integrity that are better indicate changes in circulation that are also better, where the

intervention of effleurage massage with a combination of olive oil can not only improve circulation, nourish the skin but also spontaneously provide passive mobilization carried out by researchers in assisting the patient's movement activities in bed.

Conclusion: this study is that effleurage massage with a combination of olive oil can be a complementary therapy that can be carried out by nurses and families to help maintain patient skin circulation thereby preventing complications from pressure sores.

Keywords: non haemorrhagic stroke, massage therapy, skin integrity, pressure ulcer.

Empowering Bajo Ethnic Community Using Occupational Health and Safety Innovation, Fisheries Business Improvement and Sustainable Health in Slums Area

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Abstract

Background and Aims: Anaiwoi Village area is 432 ha, consisting of dry land, wetland, and coastal areas. The main potential of Anaiwoi Village is the potential source of marine and fisheries products because it directly borders the waters of Bone Bay with great potential in producing export commodities in the fisheries sector. The problems in the Bajo village are slum areas, public bathing, washing, and toilet facilities not suitable for health conditions, also the unavailability of equipment that supports Occupational Health and Safety (OHS) for fishermen. The aims of this study were to increase public knowledge, and awareness in implementing clean, and healthy living behavior as well as increase the quality and quantity of fishermen's catches by providing OHS tools and family latrines. **Methods:** The method used is community empowerment through training and improving

facilities that support environmental health: Providing and training on OHS, training on the hygienic use of fish drying machines, and adoption of technology for making family latrines as an effort to improve the quality of clean and healthy living behavior in community. This activity involves the community as partners in 2 groups, the fishermen group and the fishermen women group as target partners. **Results:** There has been an increase in health knowledge and quality, especially for environmental health through the use of proper family latrines using the communal method, an increase in the quality and number of fishermen's catches by using OHS equipment for fishermen. **Conclusion:** Improving the quality and community awareness of clean and healthy living behavior starts from the OHS Introduction and Training stage, introduction to the use of fish drying equipment or machines and the construction of family latrines as a form of prevention and transmission of disease caused by environmental pollution in coastal areas.

Keywords: Family Latrines, OHS, Slums Area

Expert System For Diagnosis of Diseases in Superior Rice Variety Plants using Inpari 8 Dempster Shafer Method: Case study

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Abstract

Background and Aims: Samaturu sub-district, rice farming activities are the livelihood of the majority of residents so the success rate of the amount of rice harvested is very important because it depends on how much rice can be harvested for their livelihood. The problem that occurs is that there are many losses caused by rice plant diseases in the superior rice variety Inpari 8 which are caused by environmental factors, humans and plant pests, especially pathogens or disturbing microorganisms (viruses, bacteria and fungi) which are too late to be diagnosed, causing failure. harvest, and it is still difficult for farmers to find out the cause of plant disease quickly and precisely, especially if what causes the disease is a pathogen because it is small and almost invisible. With the existence of an expert system for diagnosing disease types in the superior rice variety Inpari 8 using the Dempster Shafer method, it can help farmers overcome diseases that attack rice plants. Rice plant diseases used in this system are: Blas Disease, Bacterial Leaf Blight or Crackle, Tungro Disease, Grass Stump Disease. **Methods:** This system was designed using a software development model, namely Waterfall, a method often used by system analysts in general. The essence of the waterfall method is that work on a system is carried out sequentially, namely: system requirements analysis, system design, system coding, system testing and program implementation and maintenance. The testing model used in designing this expert system is black box testing which focuses on the functional

specifications of the software. The tester can define a set of input conditions and perform tests on the functional specifications of the program. **Results:** Based on the results of the discussion of the expert system for diagnosing disease types in the superior rice variety Inpari 8, 5 symptoms were selected which resulted in calculations using the Dempster Shafer method with the highest value, namely 0.37, with the disease diagnosis being Blash. **Conclusion:** Based on the system testing carried out using the Black Box, it was found that all test results were in line with expectations and were declared valid, thus the expert system for diagnosing disease types in Inpari 8 superior rice varieties using the Dempster Shafer method was ready for use.

Keywords: Dempster Shafer, Expert System, Rice plant, Waterfall, Web

Exploring the Therapeutic Potential of *Dioscorea Hispida* Dennst for Managing Blood Pressure in Hypertension Patients

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Abstract

Background and Aims: Hypertension stands as a major global health concern, particularly affecting developing nations. The worldwide proportional mortality rate attributed to hypertension reaches a staggering 13%, accounting for approximately 8 million deaths annually. The treatment of hypertension has far-reaching economic implications for communities, motivating individuals to seek alternative, cost-effective remedies. Many turn to herbal or traditional treatments due to their perceived efficacy and minimal side effects. One promising compound recognized for its potential antihypertensive effects through ACE (Angiotensin-Converting Enzyme) activity inhibition is protein dioscorin, predominantly found in tubers of the *Dioscorea* family, including yams. This study aims to assess the effectiveness of Gadung sweet potato extract in lowering blood pressure among hypertension patients in Kolaka Regency. **Methods:** Employing a quasi-experimental design with a two-group pre-test and post-test approach, the intervention group will receive Gadung extract, while the control group will undergo standard hypertension treatment. Processed Gadung gave 2 times a day, lunch and dinner (1360 mg/kg BW or 1.36 gr/kg BW per meal) as a substitute for staple food. Purposive sampling used to select respondents, with a target of 100 hypertensive individuals in each group. The intervention was span 7 days, and blood pressure measurements taken both before and after the intervention. Statistical analysis performed using the t-test. **Results:** There were 20 respondents aged 46 to 55 years, 37

respondents aged 56 to 65 years, and 43 respondents over 65 years old. In terms of job status, there were 38 respondents who were farmers, 29 who were housewives or not working, 25 who worked in the private sector, and 8 who were civil servants. The findings of this study reveal a notable reduction in blood pressure levels. Prior to the intervention, the median blood pressure reading among respondents was 160/110 mmHg, while after the intervention, it decreased to a median value of 110/90 mmHg. **Conclusion:** bioactive compounds present in local tubers, such as Gadung, particularly Dioscorin and phenol, exhibit antihypertensive properties.

Keywords: Blood pressure, Dioscorea Hispida dennst, Gadung, Hypertension, Local wisdom

Factors Related With the Incidence of Low Birth Weight in Tiworo Tengah and Kombikuno Public Health Center West Muna District

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Abstract

Background and Aims: As many as 19% of the causes of neonatal death are LBW and premature. The Provincial Health Office, West Muna Regency reported Low Birth Weight in 2019 reaching 3.57%, increasing in 2022 to 4.87%. This aims to Aims: determine the factors of age, occupation, education, spacing of pregnancies, history of Chronic Energy Deficiency and history of anemia during pregnancy associated with the incidence of Low Birth Weight at Tiworo Tengah Health Center and Kombikuno Health Center, Muna Barat Regency. **Methods:** This type of research is analytic observational research with a case control approach. This research was conducted at the Kombikuno and Tiworo Tengah Health Centers, West Muna Regency from April to June 2023 on mothers under five with a total sample of 60 people, 30 case samples (LBW Babies) and 30 control samples (Normal/non LBW Babies). The data collected included the incidence of LBW, age, occupation, education, history of CED and anemia during pregnancy and the interval between pregnancies using a questionnaire and verified with the MCH handbook. The data was then processed and analyzed univariately and bivariately. **Results:** Most of the mothers during pregnancy (71.7%) were in the risk category, most of the mothers during pregnancy (80.0%) were in the category of not working. Most of the mothers' education (51.7%) were in the high category, the spacing of most of the mothers' pregnancies (81.7%) was in the non-risk category, the history of maternal CED during pregnancy was mostly (83.3%) did not

experience CED and a history of maternal anemia during pregnancy most (85.0%) did not experience anemia. **Conclusion:** Age, occupation, education, history of CED and maternal anemia during pregnancy did not have a significant relationship with the incidence of LBW, while the spacing of pregnancies had a significant relationship with the incidence of LBW.

Keywords: Mother Age. . Education. . Chronic Energy Deficiency ,
Anemia. Low Birth Weight

Foot Care to Prevent Diabetic Foot Ulcers: Benyamin Guluh Hospital

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Abstract

Background and Aims: Diabetes mellitus (DM) is a chronic disease characterized by high blood sugar (glucose) levels that exceed normal values. DM is caused by several factors, including unhealthy lifestyles such as poor dietary habits, obesity, and lack of exercise. The objective of this study is to describe foot care behavior aimed at preventing diabetic foot ulcers. **Methods:** This research used quantitative observational research. The study included 25 participants, all of whom were patients with diabetes mellitus in the internal medicine clinic ward of BLUD Benyamin Guluh Hospital, Kolaka Regency. **Results:** The research results revealed that 16 respondents (64%) exhibited poor behavior, while only 9 respondents (36%) displayed good behavior. The discussion of foot care behavior itself can be influenced by several factors, namely based on the age factor of respondents aged 45-59, almost half of whom have bad behavior. Meanwhile, respondents who have bad behavior can be seen in the answers of respondents who rarely examine all parts of their feet, rarely dry their feet down to the toes, rarely check their shoes before or after wearing them and rarely wear closed shoes when traveling. Based on gender, this research shows that female respondents have more good behavior than male respondents, namely 16 respondents with a percentage of 64%. **Conclusion:** Foot care behavior to prevent diabetic foot ulcers is still categorized as poor. Suggestions for future research involve encouraging individuals with diabetes mellitus to enhance their routine foot care behavior in a proper and effective manner, underscoring the significance of preventing diabetic foot ulcers.

Keywords: Diabetes mellitus sufferers, foot care

Gerontic Nursing Care Brain Exercises on Cognitive Function in The Kolakaasi Community Health Center Work Area

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Abstract

Background and Aims: Cognitive function is a process where all sensory input (tactile, visual and auditory) will be changed, processed, stored, and then used for perfect interneuron connections so that individuals are able to reason about the sensory input. Cognitive function can be defined as mental ability consisting of attention, language ability, memory, visuospatial ability, ability to create concepts and intelligence. The aim of this research is to describe nursing care to reduce cognitive function disorders in the elderly by applying brain exercises. **Methods:** This research design uses descriptive research methods with a case study approach in the nursing care process. **Results:** The research results obtained from basic assessment analysis determined using SPMSQ and MMSE cognitive function examinations with the results of patient I having SPMSQ scores: 3 and MMSE: 20, patient II having SPMSQ scores: 6 and MMSE: 15. Meanwhile, nursing care used brain exercises with fulfilled interventions in the form of observation, therapy, education, and collaboration. The implementation used is providing brain exercises and monitoring memory changes in patients. Meanwhile, the evaluation obtained where there was a decrease in cognitive status was carried out by examining SPMSQ and MMSE with results in patient I, SPMSQ value: 1 and MMSE: 24, patient II, SPMSQ value: 2 and MMSE: 20. **Conclusion:** The conclusions in this study were assessment, intervention, and proper implementation can provide evaluations that can slow down the decline in cognitive function in the elderly.

Providing appropriate intervention/treatment with clear characteristics and clinical manifestations will provide results as expected

Keywords: Nursing care, cognitive function, elderly, brain exercise

Improving Foot Sensitivity in Diabetic Patients: Exercise with Sponge and Plastic Ball

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Abstract

Background and Aims: Diabetes mellitus (DM) is a chronic disease with a high prevalence of complications. One of these complications is diabetic neuropathy, a common condition in DM patients that leads to decreased foot sensitivity. This condition can progress to an ulcer and pose a risk of amputation. Therefore, this study aims to compare the effectiveness of foot exercises using sponges and plastic balls in enhancing foot sensitivity in individuals with type 2 diabetes. **Method:** This study employs a quantitative approach with a quasi-experimental pre- and post-test control group design. The sample consisted of 30 respondents who met specific criteria, selected through purposive sampling. Fifteen respondents performed leg exercises using sponges, while the other 15 respondents used plastic balls. Data collection involved the use of a 10 g monofilament to measure sensitivity in both the left and right paws. Evaluation was conducted before and after diabetic foot exercises on a scale of 0-10. Data were analyzed using univariate, bivariate, and multivariate methods. **Results:** Most of the respondents were predominantly male and had been suffering for an average of 8 years. The analysis of foot sensitivity showed a significant increase in the sponge group after the intervention, with notable improvements observed in both the right foot ($p=0.001$) and left foot ($p=0.001$). The average age in this group was 59.27 years. In the ball group, there was a statistically significant increase in sensitivity in the right foot ($p=0.023$), while in the left leg, there was no statistical change ($p=0.060$). However, clinical data revealed an increase in sensitivity. The average age of

this group was 55.9 years. **Conclusion:** Foot exercises using sponges have proven to be more effective in increasing foot sensitivity.

Keywords: Diabetic, exercises, plastic ball, sensitivity, sponges

Increasing Local Corn Production Based on Organic Fertilizer Innovation in Rahabite Village, Kolaka Regency

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Abstract

Background and Aims: Kolaka Regency is a priority area for the Kosabangsa Program in 2023. The area chosen as the target area for service is Rahabite Village. This village has a good level of soil fertility. The village's main potential is plantation and horticultural land of 7,294.5 hectares and the commodities is corn, palm oil and horticulture. The main problems for corn farmers include inadequate chemical fertilizers, increasingly high prices for chemical fertilizers and farmers' lack of skills in making organic fertilizers. The aim of the service is to increase public knowledge in making organic fertilizer. **Methods:** The service methods used include community outreach, training in making organic fertilizer and demonstrations in making organic fertilizer on industry scale. **Results:** Manufacture of organic fertilizer through the adoption of biological agent organic fertilizer innovation which goes through seven stages, including preparation of tools and materials, arranging materials in layers, mixing, fermentation, milling, packaging and weighing, as well as storage of finished products (organic fertilizer products). **Conclusion:** There are seven stages in making organic fertilizer and the key factors for the success of

making organic fertilizer are the stage of selecting the right ingredients, the fermentation process going well and the grinding stage using an APPO machine so that the resulting size is uniform and able to separate stone, glass, wood and other ingredients.

Keywords: Corn, Organic Fertilizer, Production

Knowledge and Foot Care Behavior in Patients With Type 2 Diabetes Mellitus

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Abstract

Background and Aims: Diabetes Mellitus (DM) is a metabolic disease caused by insulin resistance due to a buildup of blood sugar in the body. This condition causes damage to blood vessels and innervation resulting in decreased sensitivity in peripheral tissues. Among the various complications that can occur in diabetes sufferers, diabetic foot disease is the most common complication but the most preventable. This complication occurs due to a lack of understanding regarding foot care for people with diabetes among the various complications that can occur in diabetes sufferers, diabetic foot disease is the most common but most preventable complication. This study aims to examine the knowledge and foot care behavior of type two diabetes mellitus (DM) patients who come to the hospital. The aim of this research is to describe the knowledge and behavior of foot care in people with type II diabetes mellitus at RS SMS Berjaya Kolaka. **Methods:** The research method uses quantitative descriptive. Sampling used Purposive Sampling technique, with a total research sample of 26 respondents. The research instrument used the Diabetic Foot Knowledge Scale (DFKS) foot care knowledge questionnaire and the Nottingham Assessment of Functional Footcare (NAFF) foot care behavior questionnaire. The analysis used is univariate analysis with frequency distribution. **Results:** The results of the study showed that the majority of people with type II Diabetes Mellitus, 25 respondents (96.2%) showed insufficient knowledge

with the behavior of the majority of 24 respondents (92.3%) being in the category of poor behavior or non-compliance in diabetic foot care. **Conclusion:** The conclusion of this research is that the majority of type II diabetes sufferers still have insufficient knowledge and do not carry out foot care, so it is highly recommended that health workers provide holistic education regarding the prevention of diabetic foot wounds through foot care.

Keywords: behavior, foot care, diabetes mellitus, diabetic wounds, knowledge

Knowledge, Attitude, and Behavior of Coastal Communities Toward Wound Self- Medication in Kolaka Regency

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Abstract

Background and Aims: is the activity of selecting and using drugs without a doctor's prescription, both synthetic drugs and traditional medicines to treat disorders or symptoms of the disease. In Pomalaa, Tanggetada, Watubangga, and Toari Subdistricts, an area located on the coast of Kolaka Regency, the majority of the population has been working as fishermen for generations. People in this area use traditional medicine and synthetic medicine to carry out self-medication to treat wounds. This research aims to determine the knowledge, attitudes and behavior of coastal communities regarding wound self- medication and the relationship between coastal communities' knowledge of wound self-medication behavior, as well as the relationship between coastal communities' attitudes towards wound self-medication behavior. **Methods:** type of descriptive-analytic quantitative research, carried out observationally with a cross sectional design, sampling using consecutive sampling technique, the sample used was 140 respondents in accordance with the inclusion criteria. Respondents who lived on the coast, were male and female, worked or have a family who work as fishermen, Respondents who have experienced injuries while working, who live on the coast, Aged 17-65 years, Willing to be respondents. Using a questionnaire and univariate, bivariate and multivariate analysis. **Results:** Coastal communities have moderate knowledge

of 63.6%, poor attitudes of 92.9%, poor behavior of 93.6%, and there is a relationship between knowledge of wound self-medication behavior with a value of $p=0.005$ and $r= 0.500$ and there is a relationship between attitude towards wound self-medication behavior with a value of $p=0.002$ and $r=0.874$. **Conclusion:** People who live along the coast have moderate knowledge, less attitude, less behavior and there is a relationship between knowledge of wound self-medication behavior and there is a relationship between attitude towards wound self-medication behavior.

Keywords: Attitude, Behavior, Knowledge, Self-medication
Wound

Length of Time Suffering from Type 2 Diabetes Mellitus Can Reduce the Quality of Life in the General Health Domain

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Abstract

Background and Aims: Type 2 Diabetes Mellitus (T2DM) is a chronic disease characterized by blood glucose levels exceeding normal values which can cause complications in various body systems, thus impacting the patient's quality of life. The purpose of this study was to determine the relationship between duration of diabetes mellitus and the quality of life of T2DM patients.

Methods: This research used quantitative methods with a cross sectional study design, the population of this study is all T2DM patients in the Poasia Health Center working area, totaling 547 patients, the sampling technique used was accidental sampling on 61 respondents suffering from T2DM according to the inclusion and exclusion criteria at the Poasia Health Center, Kendari City. Data was collected using a questionnaire from respondents' demographic data and Health Related Quality of Life (HRQOL) SF-36. The SF-36 questionnaire consists of 36 questions divided into 8 domains, namely: physical function, physical limitations, body pain, general health, vitality, social function, emotional limitations, and mental health, data analysis using Spearman Rho.

Results: The results of this study show that the average duration of suffering for T2DM patients is 4 years with an average quality of life in the domains of physical function 65, physical limitations 50, body pain 70, general health 54.2, vitality 45, social function 75, limitations emotional 66.7, and mental health 36 from a value

range of 0-100. Mental health was the lowest quality of life domain and social functioning was the highest domain. Long-term suffering from T2DM can reduce the quality of life in the health domain in general with a value of $p = 0.022$ and $r = -0.29$, which means that the longer a person suffers from T2DM, the lower the quality of life in the health domain in general. Meanwhile, the other domains did not show any relationship with the duration of suffering from T2DM with a p value > 0.05 . **Conclusion:** The conclusion is that a long period of suffering from T2DM can reduce the quality of life of T2DM sufferers in the general health domain.

Keywords: duration of diabetes mellitus, HRQOL, quality of life, T2DM

Quality of Public Services for Patients With Disabilities at the BLUD of Benyamin Guluh Hospital, Kolaka Regency, Southeast Sulawesi

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Abstract

Background and Aims: People with disabilities have the same rights and obligations in accessing public services, especially health services, people with disabilities are given special facilities to make it easier to access health services which are oriented towards the quality of service they receive, therefore this research was conducted with the aim of knowing the quality of service for patients. disability at BLUD Benyamin Guluh Hospital, Kolaka Regency. **Methods:** This research is research using qualitative descriptive approach through data reduction, data presentation, drawing conclusions. Namely providing a comprehensive overview of the main problems discussed, especially those related to the quality of service for disabled patients at the BLUD of Benyamin Guluh Hospital, Kolaka Regency. **Results:** The results of this research show that people with disabilities in the BLUD of Benyamin Guluh Hospital, Kolaka Regency, are not in line with what disabled patients expect, both in terms of service, administration, care services and limited facilities. Even though the hospital thinks they have provided the best service they can. In terms of facilities at the BLUD Benyamin Guluh Hospital, Kolaka Regency, it is very inadequate. Awareness of the resources needed by people with disabilities and the government's attention, in this case, people with disabilities and the BLUD RSBG service personnel in Kolaka Regency, are fully aware of the resources, facilities and infrastructure needed. by people with disabilities and a manifestation of the government's attention in fulfilling the rights

of people with disabilities in the accessibility of public services such as the availability of wheelchairs, special wheelchair lanes, and priority seats for people with disabilities even though in terms of facilities that are not yet adequate, such as the absence of service flow for people with disabilities, braille for the blind, and other facilities. **Conclusion:** Health services at BLUD RSBG for disabled patients not yet sufficient to meet good service quality standards, due to the lack of infrastructure provided to serve disabled patients.

Keywords: BLUD RSBG Kolaka Regency, Disabilities, and Public Services.

Relationship of Dietary Habit, Consumption of Blood Supplement Tablets, Knowledge of Anaemia and Menstrual Patterns With Anaemia Status Among Adolescent Girls

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Abstract

Background and Aims: Anaemia is a body condition in which haemoglobin levels in the blood are lower than normal. The prevalence of anaemia in adolescent girls in Indonesia, based on Riskesdas data in 2013, was 37.1%, but increased based on Riskesdas data in 2018 by 48.9%. In Southeast Sulawesi, anaemia in adolescent girls in 2017 was 33.2%, which increased in 2018 by 42.1%. This study aims to determine the relationship between dietary habit, consumption of blood supplement tablets, knowledge about anaemia, and menstrual patterns with anaemia status among adolescent girls. **Methods:** This study is an observational descriptive study with a cross-sectional study approach and was carried out in February 2023 at SMA Negeri 6 Kendari. The sample in this study was 70 students. The sampling technique used is Proportional Random Sampling. The relationship between variables is statistically tested using the Chi-square test. **Results:** This study showed that 51.4% of adolescent girls had a diet in the adequate category, 84.3% of adolescent girls had a consumption of blood-added tablets in the irregular category, 87.1% of adolescent girls had a level of knowledge about anaemia in the good category, 64.3% of adolescent girls had menstrual patterns in the normal category, and 65.7% of adolescent girls who did not have anaemia. The results of statistical tests showed that there were relationship between diet, the level of knowledge about anaemia and menstrual patterns, and anaemia status with p-value 0.043, 0.001, and 0.008, respectively. While, the

consumption of blood-added tablets has no relationship with anaemia status ($p = 0.083$). **Conclusion:** Dietary habit is related to anaemia status, consumption of blood supplement tablets is not related to anaemia status, level of knowledge about anaemia is related to anaemia status, and menstrual patterns are related to anaemia status in adolescent girls at SMA Negeri 6 Kendari.

Keywords: Anaemia, Dietary habit, Supplement Tablets, Knowledge, Menstrual Patterns

Relationship Wrist Flexibility and Arm Muscle Strength to Smash in Table Tennis

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Abstract

Background and Aims: This research was carried out in February 2023 at SMK Negeri 2 Kolaka. The purpose of this study was to determine whether there is a relationship between the flexibility of the arm muscle strength and the accuracy of the forehand smash in table tennis. **Methods:** This research is correlational to see the relationship between variables, where the researcher wants to know the relationship between wrist flexibility and arm muscle strength on smash accuracy in table tennis at SMK Negeri 2. The population in this study were all students of Class XI SMK Negeri 2 Kolaka which consisted of 10 classes totaling 263 male students. The instruments used are the wrist flexibility test (geniometer), arm muscle strength test (push up) and forehand smash accuracy test (20 Forehand Smash rally). This research uses direct data collection techniques on samples by means of tests and measurements analyzed the result data using the IBM SPSS statistics 26 application. The data analysis techniques include to prerequisite tests including (normality test and linearity test) and hypothesis testing (simple and multiple correlation analysis). **Results:** This research indicate that there is a simultaneous relationship between wrist flexibility and arm muscle strength on smash accuracy. The significance value obtained is 0.000 in the correlation category (very strong 0,80 - 1000) and the correlation coefficient value obtained is 0.965 which is included in the perfect relationship level. **Conclusion:** The importance of the close relationship between wrist flexibility and arm muscle strength on smash ability in table tennis. The research results show that players

who have a good level of wrist flexibility and adequate arm muscle strength tend to have stronger and more accurate smash.

Keywords: flexibility, arm muscle strength, forehand smash

Rhynchophorus ferrugineus as a Local Food to Reduce Childhood Malnutrition in Wolasi, Southeast Sulawesi

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Abstract

Background and Aims: The public health problem is important for reducing childhood malnutrition. Animal foods, e.g., insects, source high levels of protein to provide essential amino acids in a more adequate pattern than plant-based protein. However, the production of sufficient animal-sourced protein to feed the growing world population is a serious challenge. This review aims to explore the evidence on the use of edible insects as an alternative source of protein and amino acids in complementary foods for children and their potential to reduce childhood malnutrition. **Methods:** a cross-sectional study to look for the nutrient content of *Rhynchophorus ferrugineus*, fresh and dried. **Result:** Research is required to develop and automate cost-effective, energy-efficient harvest and post-harvest processing technologies with simple procedures that ensure food for product-safe insect products at acceptable levels to be established as supplement food for toddler stunting. The nutritional analyses of the caterpillar showed a high level of protein (8.52%) in fresh caterpillars and protein (16.42%) in dried caterpillars with vacuum drying. This study assessed the efficacy of insect-enriched foods on nutritional indicators and found an effect on the reduction of

stunting and wasting. **Conclusions:** Insect-enriched supplements and ready-to-use foods for children are safe and acceptable and have the potential to tackle micronutrient deficiencies. More studies are needed to examine their effect on nutritional status in children.

Keywords: *Rhynchophorus ferrugineus*; local food; childhood malnutrition

Self-Esteem of Covid-19 Survivors at Tegal Selatan PHC

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Abstract

Background and Aims: Self-esteem is influenced by negative psychological experiences such as fear and loneliness which can significantly affect oneself. Measures to prevent the spread of Covid-19, such as reducing social contact and isolation, give rise to clients' feelings of loneliness. Individuals with high self- esteem tend to be confident, competent, and able to overcome stressors, while individuals with low self- esteem tend to be less active, not confident, and unable to express themselves. There was a bad stigma towards Covid-19 survivors in the Tegal Selatan Public Health Center as well as an unsupportive social environment which can make survivors feel anxious. The impact of stigmatization can cause social isolation, thereby reducing the social support needed by individuals infected with Covid-19. This can caused stress, anxiety or fear of socializing again, which has an impact on the survivor's self-esteem. This research aimed to determine the self-esteem of clients who are Covid-19 survivors at the Tegal Selatan Public Health Center. **Methods:** This quantitative research used a cross sectional design involving 57 samples. The sampling technique uses Proportionate Stratified Random Sampling. The inclusion criteria for this study were: 1) willing to be a respondent, 2) having been infected with Covid-19 in the last 6 months (September 2021- February 2023), 3) aged 26-45 years, 4) never been hospitalized. The exclusion criteria in this research

were survivors who at the time of the study had serious illness or were not at home. Data were obtained using the Rosenberg Self Esteem Scale (RSES) questionnaire and analyzed univariately. **Results:** Of the 57 respondents, 33 people (57.9%) had low self-esteem, 21 people (36.8%) had normal self-esteem, and 3 people (5.3%) had high self-esteem. **Conclusion:** The research results show that the majority of respondents experienced low self-esteem when experiencing Covid-19.

Keywords: covid-19 survivors, self esteem

Sequential Effect of Training in Exercise Skills Among Caregivers on Quality of Life Among Post Stroke Patients

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Abstract

Background and Aims: The development of stroke patient care can be done with technological innovations for families that focus on health care, disease management, and household assistance, in this case supported by research. **Methods:** The research design used was one-group pre-test-post-test design research. The population of this study was families who acted as caregivers One of the family members suffered a stroke and lived in the working area of the Tamalanrea Health Centre, Makassar City. The research respondents were 10 families determined through purposive sampling. The implementation of this research was carried out for six months, namely from February to July 2023. Thus, this study explores more deeply related to the analysis of the development of family-based therapy in stroke patients with psycho-neuro-muscular disorders in the working area of the Tamalanrea Health Centre, Makassar City. **Results:** The results of this study found that there was an influence between the provision of ROM

interventions on patient skills, with a p-value <0.05 (0.025). The results of the signed Wilcoxon test of cognitive-behaviour therapy (CBT) obtained a p-value of 0.174, so it can be concluded that there is no average difference in skills between the first and second CBT interventions. **Conclusion:** Knowledge and skills are things that are needed by caregivers in caring for families with stroke. Therefore, efforts are needed from various parties, especially the health centre, to assist patients in the stroke recovery process.

Keywords: Caregiver, Empowerment, Family Based Therapy, Family, Stroke Patient

The Effect of Moderate Intensity Aerobic Exercise on Cholesterol Levels in Productive Women at Mala-Mala Health Center

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Abstract

Background and Aims: Hypercholesterolemia is the cause of one third of ischemic heart disease and death (4.5% of total deaths), and 29.7 million people experience the inability to live a normal life. Reports from the North Kolaka District Health Service for the last three years note that at the Mala-Mala Community Health Center the number tends to increase. The aim of this study was to determine the effect of moderate intensity aerobic exercise on the cholesterol levels of productive women at the Mala-Mala Community Health Center. **Methods:** This pre-experimental research used a one group pre-test post-test design. The population in this study were productive women who had high cholesterol levels recorded in the Mala-Mala Health Center medical record book for the period January-March 2023, namely 54 people. With purposive sampling, 48 samples were obtained that met the inclusion criteria, namely productive women, aged 20-64 years, cholesterol levels ≥ 200 mg/dL. Data was obtained from the results of cholesterol measurements using a portable cholesterol test kit to determine the respondents' cholesterol levels, then the data obtained was tested using a paired test. **Results:** The characteristics of the respondents were that most were 30-39 years old, had less than elementary school education, and worked as housewives. The results of the research showed that in the pre-test cholesterol levels were in the high category (256.73 ± 44.34), and in the post- test they decreased to the moderate category (213.29 ± 38.52). **Conclusion:** With these results, it can be concluded

that moderate intensity aerobic exercise has an effect on reducing cholesterol levels (p value = 0.000) in productive women at the Mala-Mala Community Health Center.

Keywords: Cholesterol Levels, Moderate Intensity Aerobic Exercise, and Productive Women

The Effect of Purple Sweet Potato and Red Beans as a Dietary on Blood Glucose Levels Among Diabetes Mellitus Patients

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Abstract

Background and Aims: Diabetes mellitus (DM) is a type of degenerative disease in the form of a metabolic disorder characterized by blood sugar levels that exceed normal limits. In this study, a product innovation was made in the form of cookies made from purple sweet potato and red bean are high in fiber, antioxidants and have a low glycemic index value which can lower blood glucose levels in people with DM Type 2. This study aims to determine the effect of purple sweet potato and red bean consumption on 2 Hour Post prandial blood glucose levels among DM patients. **Methods:** This research is a quasi-experimental study with a pre-test and post-test control group design. There are 32 subjects recruited this study by using purposive sampling method, and these subject classified into treatment and control groups which consist 16 subjects in each group. Blood glucose levels were taken by medical laboratory technology students with a glucometer. Samples were given 8 cookies/day with a total weight of 72 grams for 7 days. Data analysis used an independent t-test to see the effect of cookies on blood glucose levels 2 hours post prandial. **Results:** The results showed that there was an average difference in the decrease in blood glucose levels 2 hours post prandial in the treatment group, namely 74.124 mg/dl and in the control group, 19.250 mg/dl. The results of the independent t-test showed that there was an effect of giving purple sweet potato and red bean cookies on blood glucose levels 2 hours post prandial in type 2 diabetes mellitus patients with a p value<0.05 (0.000). **Conclusion:** There is an effect of giving purple sweet potato and

red bean cookies on decreasing blood glucose levels 2 hours post prandial in type 2 diabetes mellitus.

Keywords: Cookies, Purple Sweet Potato, Red Bean, Diabetes Mellitus, Blood Glucose Levels

The Effectiveness of Abdominal and Axial Warm Compresses in Reducing Fever among Paediatric Patients

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Abstract

Background and Aims: In response to the pressing challenge of reducing child morbidity and mortality, especially in developing countries, effective healthcare interventions are urgently needed. Febrile symptom, primarily caused by infectious diseases, continue to pose a significant threat to children's health. In this context, our study aimed to evaluate the potential of warm compresses, a non-pharmacological approach, in effectively managing fever in paediatric patients. **Methods:** Our research was conducted at Benyamin Guluh Hospital, Indonesia, in 2022, involving a total of 182 febrile children. We divided the participants into two groups: one received warm compresses on the abdominal and axillary areas, while the other received cold compresses. We meticulously monitored body temperature before and after the treatment sessions, ensuring proper research methodology. Additionally, we controlled for the use of antipyretic medications during the study period. **Results:** Our findings indicated that warm compresses applied to the abdominal and axillary areas were significantly more effective in reducing body temperature compared to cold compresses. Among the children who received warm compresses, a substantial temperature reduction ranging from 0.7°C to 1.0°C was observed, while the group receiving cold compresses exhibited a less substantial reduction in temperature, ranging from 0.4°C to 0.9°C. **Conclusion:** In conclusion, our study demonstrates that warm compresses, when applied to the abdominal and axillary areas, constitute an effective non-pharmacological

intervention for reducing fever in paediatric patients. These results have important implications for healthcare professionals involved in managing febrile conditions in children, providing a valuable alternative to pharmacological treatments. The insights from this research can contribute to improved healthcare strategies for paediatric patients in developing countries and beyond. Further research could delve deeper into the long-term benefits and patient comfort associated with this intervention.

Keywords: fever, paediatric patients, warm compress

The Effectiveness of Iron Tablets (Fe) Provision on Haemoglobin Levels Among Senior High School Students

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Abstract

Background and Aims: Anaemia is a micronutrient problem that occurs throughout the world, especially in developing countries, which is estimated to occur in 30% of the world's population. Anaemia is common in all age groups, especially in adolescents. One of the efforts made by the government to overcome the problem of anaemia in adolescents is through the provision of blood-supplementation tablets (TTD) in the form of iron and folic acid. This study aims to determine Haemoglobin Level before and after giving Fe tablet as well effectiveness giving iron tablet (Fe) on Haemoglobin Level among of senior high school students. **Method:** This research includes pre-experimental research in the form of One Group Pre-test and - Post-test Design. The population in this study were all students in grades 1 and 2 at SMAN 2 Lakudo with a total of 142 people and the sample in this study was 43 people and proportional random sampling was taken. Data was collected by interview using HemoCue and questionnaires. Data analysis to determine the difference before and after administration of Fe tablets by using the paired sample t-test. **Result:** The results showed that 88.4% of the samples had normal haemoglobin levels before administration of Fe tablets and 95.7% had normal haemoglobin levels after administration of Fe tablets. The results of statistical analysis using the paired sample t-test obtained p value = 0.000, so it was concluded that there was an effectiveness of giving iron (Fe) tablets to the haemoglobin levels of students. **Conclusion:** Giving of tablet Fe before and after has on

effect on Hb level in female senior high school SMAN 2 Lakudo Buton Tengah District. Recommended, it is suggested that young women are expected to continue to consume Fe tablets regularly in their daily lives so that they can meet the nutritional needs needed by the body, especially increasing iron.

Keywords: Anaemia, Haemoglobin Levels, Fe Supplement

The Phenomena in Kolaka: “Hard” Drugs into Drug Stalls an Observational Study

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Abstract

Background and Aims: stalls (warung) are the type of small business closest to the community. Warung is an illegal drug service facility, so it is incompetent as a source of drug information for the community. According to Regulation of the Minister of Health of Indonesia No. 917 of 1993 concerning the mandatory list of drugs, there are types of drug classifications, namely over-the-counter, limited, hard, and traditional drugs. This study aims to determine the types of synthetic drugs and traditional medicines sold at warung, identify the compatibility between facts related to drug sales with laws and regulations, and find out the level of knowledge of business actors about drug management. **Methods:** This study used a descriptive-categorical quantitative survey approach, with an observational research type. **Results:** as many as 45 warung in the Latambaga sub-district that sell drugs with places to obtain these drugs at pharmacies (91%), pads (2%) and warung (7%). These drugs sold in warung are over- the-counter drugs (32%), limited over-the-counter drugs (37,6%), hard drugs (23%) and traditional medicines (6,5%), these drugs are traded in warung freely. The free sale of drugs can pose a risk of counterfeit drugs entering the drug distribution chain, so supervision provisions are established by carrying out good drug distribution methods (CDOB). **Conclusion:** The warung’s owners sell over-the-counter drugs, limited over- the-counter drugs, hard drugs, and traditional medicines. In limited over-the-counter drugs, there are drugs containing the active substance dextromethorphan and the

precursors of the active substance, namely ephedrine and pseudoephedrine. In addition, warung's owners sell hard drugs freely without a doctor's prescription which should only be traded in licensed drug stores and pharmacies. This is due to a lack of supervision and knowledge regarding drug management.

Keywords: drug distribution, stall, synthetic medicine, traditional medicine

The Potency of Ginkgo Biloba as a Functional Phytochemical Herb

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Abstract

Background and aims: There is an increasing prevalence rate of neurodegenerative nowadays. People tend to use antioxidant phytochemical herbs to slow the rate of the disease. One of the phytochemical herbs that is often used is ginkgo biloba. This paper aims to describe the potency of ginkgo biloba as a functional phytochemical herb. **Methods:** This is a narrative literature review. Literature was taken from PubMed, Google Scholar, and Science Direct. The selected articles were published within 10 years. Inclusion criteria were full-text journals (research and review). Exclusion criteria were unavailable full text in English. **Results:** Ginkgo biloba has been studied widely and it is presumed that this plant has many bioactive components that support the functional phytochemical herbs. G. biloba is useful as an antidementia, anticancer, anti-obesity, antidiabetic, antimicrobial, antihypertensive, antilipidemic, anti-platelet, antimicrobial, and anti-depressant. Due to its rich benefits in health, this plant should be used with precaution for patients who consumed medicine and undergo operations. It might interact with other medicines and increase the bleeding time during the operation due to spontaneous haemorrhage (bleeding). **Conclusion:** In conclusion, the potencies of ginkgo biloba are anti-obesity, antidiabetic, antihypertensive, antimicrobial, anti-dementia, and anti-platelet. However, the usage in patients with routine medication and post-surgery should be very careful due to the possibility of spontaneous haemorrhage.

Keywords: anti-oxidant, ginkgo biloba, phytochemical herb

The Relationship Between Breakfast Habits, Physical Activity, and Sleep Patterns With Anaemia among Girl Students at a Senior High School

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Abstract

Background and Aims: Anaemia is a medical condition in which the haemoglobin level is less than normal. The prevalence of Anaemia in adolescent girls in Indonesia significantly increased in recent decade is about 37.1% and 48.9%, in 2013 and 2018, respectively. . In the city of Baubau, the prevalence of Anaemia in adolescent women in 2022 is approximately 36,4%. Adolescent women are more susceptible to Anaemia than adolescent boys, this is because young women experience a menstrual cycle, so there is production of more red blood cells. Meanwhile, young men do not experience this that matter. This research aims to determine the Relationship between Breakfast Habits, Physical Activity and Sleep Patterns with Anaemia in Adolescent Women at SMA Negeri 1 Baubau. **Methods:** This research is utilizing a Cross Sectional Study design, and has been conducted on March 2023 at SMA Negeri 1 Baubau. The sample used in this study was 60 students The sampling technique employed was Proportional Random Sampling. Collecting data ; Anaemia status is collected by measuring hemoglobin levels with using an Easy Toch Meter brand tools. Breakfast habits , Physical activity . Sleep patterns was collected using the direct interview method using a questionnaire ;The relationship between variables was tested statistically using the chi-square test. **Results:** It is found that there is indeed a relationship between breakfast habits with Anaemia ($p = 0,003$). There is no relationship between physical activity with Anaemia (p

= 0,163). There is a relationship between sleep patterns with Anaemia (p = 0,014).

Conclusion: There is a relationship between breakfast habits, sleep patterns , and there is no relationship between physical activity with Anaemia in adolescent women .

Keywords: Anaemia, Adolscent Women, Breakfast Habits, Physical Activity, Sleeping Patterns

The Relationship Between Family Support and Anxiety Levels in Adolescent Girls When Facing Menstruation

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Abstract

Background and Aims: Adolescence is a critical phase of life marked by significant physiological changes, primarily attributed to hormonal fluctuations. For many young girls, the onset of menstruation represents a crucial milestone in their development. However, this transitional period can also be fraught with anxiety and uncertainty. Hence, this research aims to comprehensively investigate the intricate relationship between the level of family support and the anxiety experienced by adolescent girls when they confront the challenges of menstruation. **Methods:** This study was conducted at SMP Negeri 1 Samaturu and involved a carefully selected sample of 117 respondents. The research methodology included rigorous data collection and analysis procedures. Family support and anxiety levels were meticulously assessed through the administration of a structured questionnaire. The sampling method employed cluster random sampling to ensure a representative group. The data were subsequently analyzed using both descriptive statistics and chi-square tests. **Results:** Among the 65 respondents who reported receiving positive family support, it was found that 35 (53.8%) experienced mild anxiety, 20 (30.7%) experienced moderate anxiety, and 10 (15.5%) experienced severe anxiety during their menstrual cycles. Conversely, out of the 52 respondents who indicated negative family support, 12 (23%) experienced mild anxiety, 20 (38.5%) experienced moderate anxiety, and 30 (57.7%) experienced severe anxiety during menstruation. These findings underline a significant and

compelling relationship between the level of family support and the varying degrees of anxiety experienced during menstruation ($p = 0.007$). **Conclusion:** In conclusion, this study not only underscores the profound significance of family support during adolescence but also illuminates its substantial impact on the anxiety levels experienced by adolescent girls when navigating the challenges of menstruation. These insights contribute valuable information to the broader discourse on adolescent development and mental well-being, emphasizing the critical role of familial relationships in providing a supportive and nurturing environment.

Keywords: anaemia, pregnant women, prevention

Therapeutic Management for Prevention of Pressure Wounds in Non Haemorrhagic Stroke Patients Through the Braden Scale Approach

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Abstract

Background and Aims: Non haemorrhagic stroke is a disease that occurs due to a blockage in the blood vessels of the brain which causes the brain tissue to not be supplied with adequate blood. This condition will result in the motor nerve center being disturbed so that the patient will experience impaired physical mobility in bed for quite a long period of time. One of the complications that can occur from prolonged bed rest is the appearance of pressure sores. Pressure ulcer prevention cannot be done with just one mobilization exercise intervention, it requires comprehensive management in optimizing pressure ulcer prevention while still looking at the patient's status such as sensory perception, skin moisture, activity, mobility, nutrition, and friction that occurs (Braden scale). The aim of this research is to see an overview of the implementation of decubitus wound prevention using the Braden scale approach. **Methods:** This research method was carried out using a case study approach on 2 non haemorrhagic stroke patients through the nursing care process. **Results:** The results of the study explained that after intervention to prevent pressure sores for 3 days, there were objective changes in the condition of the two patients, including increased sensory perception, increased mobility and better skin moisture than before. This shows that increasing the Braden scale in both patients will improve the patient's physical condition in mobilizing

independently so that it can reduce the risk of pressure ulcers.

Conclusion: Therapeutic management of pressure ulcer prevention is an intervention that can also be carried out by nurses and families when caring for patients at home so that productivity increases and the patient's quality of life becomes better

Keywords: stroke, pressure sores, management, skin integrity, braden scale

Relationship Between Nurses Knowledge And The Use Of Personal Protective Equipment (PPE) In The Ward RS Otak Dr. Drs. M. Hatta Bukittinggi

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Abstract

Background and Aims: Knowledge is the result of knowing and this occurs after people have sensed a certain object. Knowledge of the use of PPE must be owned by nurses in order to understand the potential risk of infection, not only knowledge but nurses must also have the awareness to use good PPE to improve the quality of good service. This study aims to determine the relationship between nurses' knowledge and the use of Personal Protective Equipment (PPE) in the inpatient room at the Hospital Otak DR. Drs. M. Hatta Bukittinggi in 2023. **Methods:** This study uses a descriptive correlative design with a cross sectional approach. The research was conducted at the hospital Otak DR. Drs. M. Hatta Bukittinggi from 14-23 July 2023. The sampling technique used total sampling with a sample size of 52 people. While the data analysis technique used the Spearman rank test. **Results:** The results showed that almost half of the nurses had sufficient knowledge about the use of PPE (42.3%), most of the nurses in the use of PPE were good (61.5%). And the results of data analysis obtained are p-value 0.001 where ($p < 0.05$) so it can be concluded that there is a relationship between nurses' knowledge and the use of PPE at the Hospital Otak DR. Drs. M. Hatta Bukittinggi with an R value (Correlation) = 0.437 which has a relationship between nurses' knowledge and the use of PPE at a moderate level. There is insufficient knowledge and insufficient use of PPE because there is a feeling of discomfort in using it. Then, because of a lack of awareness of the importance of using PPE and considering using

PPE only during emergencies. **Conclusion:** Respondents who lacked knowledge were obedient in using PPE because they did not want to catch the disease from patients or co-workers.

Keywords: knowledge of nurses, use of Personal Protective Equipment (PPE).

Section Social Sciences and Humanities

Accountability and Public Policy: Public Accountability of Primary Education Policy Implementation in Mamuju Tengah

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Abstract

Background and Aims: Accountability and public policy are two sides of a coin. In a public administration context, organizations must be able to exacerbate the implementation of public policies that have been running. The concept of accountability is crucial during the policy implementation stage to achieve predetermined goals. It signifies the government or principal's obligation to provide transparency, reports and an account of activities that are the responsibility of all parties, especially the people or agents who have the right to demand such accountability. This study aims to develop public accountability research of implementing primary education policy in Mamuju Tengah. **Methods:** The research was using a qualitative approach, aiming to provide a comprehensive explanation of phenomena by collecting extensive data through observation techniques, interviews, and documentation with primary and secondary data sources. **Results:** indicate that the implementation of the primary education policy in Mamuju Tengah has not been effective, primarily due to the lack of integrated primary education programs involving all stakeholders. In this case, there is overlap in the design of the primary education curriculum. Government's transparency in sharing information regarding the School Mobilization Program with the public remains restricted. The extent of community involvement in the

planning, execution, and evaluation stages of the School Mobilization Program is currently underway. Otherway, the strengthening of human resources (HR) in the Program Sekolah Penggerak has also been implemented effectively. This can be seen from several coaching clinics sessions provided to support the program for prospective School and technical guidance in filling out the registration essays, by the West Sulawesi Province Education Quality Assurance Agency (LPMP). **Conclusion:** the school mobilization program in Mamuju Tengah has been implemented, although not yet optimally. The education department must fulfill its role in coordinating and synergizing with stakeholders to develop programs that benefit the students.

Keywords: HRD, Primary Education, Principal-Agent, Public Policy

Analysis of PT Satria Jaya Sultra's Corporate Social Responsibility towards Empowerment in Ulu Baula Village

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Abstract

Background and Aims: Every company is obliged to carry out social responsibility towards the environment affected by the company's activities, in this case PT. Satria Jaya Sultra is obliged to show a form of social responsibility towards Empowerment in Ulu Baula Village. The research aims to analyze the social responsibility of PT. Satria Jaya Sultra for community empowerment in Ulu Baula Village. **Methods:** This research uses a qualitative descriptive research method, the data collected consists of primary data and secondary data. Primary data comes from interviews with 9 informants and the results of field observations. Meanwhile, for secondary data, data collection is carried out through literature studies and supporting literature. The data analysis technique used is qualitative data analysis using data reduction, display data presentation and drawing conclusions proposed by Miles and Hubberman. **Results:** The results of this research shows that in terms of transparency and accountability there is still a lack in the reports published by PT. SJS Kolaka in their annual report, because the report is still combined with the company's annual report, resulting in incomplete things that can be reported by the company regarding CSR implementation, such as the absence of a total budget in each main area of CSR activities and detailed explanations regarding items -items from each main field implemented and the amount of funds as well as the form of responsibility and items of assistance. Education, in the form of building educational facilities and scholarships. Health

Improvement, in the form of building village health centers, providing equipment supplies, providing medical staff and vehicles that operate to provide services to surrounding villages, including monthly assistance also provided by PT. SJS to meet the need for medicines in development facilities. **Conclusion:** social responsibility of PT. SJS in terms of community empowerment has been implemented, but the transparency and accountability of the activities carried out have not been realized optimally, so improvements to CSR in the aspects of transparency and accountability still need to be carried out.

Keywords: Corporate Social Responsibility, and Community empowerment.

Analysis of the Application of Responsibility Accounting as an Assessment of Revenue Center Performance at Pt. Hadji Kalla, Kolaka Branch Southeast Sulawesi

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Abstract

Background and Aims: Responsibility accounting is an analytical tool for assessing the performance of responsibility centers in accordance with the information required by managers. Responsibility accounting is determined by four important elements, namely giving responsibility, making performance measurements, evaluating performance and giving awards. This research aims to analyze the application of responsibility accounting as an assessment of the performance of revenue center managers at PT Hadji Kalla Kolaka Branch, Southeast Sulawesi. **Method:** The research method used is a qualitative descriptive method. The types of data sources are primary data and secondary data obtained from collecting reporting data for the 2020 period. **Results:** The results of this research indicate that PT Hadji Kalla Kolaka Branch, Southeast Sulawesi has implemented responsibility accounting quite well. The implementation of the accountability accounting system can be seen from the preparation of the budget which involves all departments, both subordinates and superiors. As well as using the budget as a tool for assessing manager performance. The company also implements a reward and punishment system. However, the company is less firm in providing punishment. **Conclusion:** The implementation of responsibility accounting as an assessment of the performance of revenue center managers at PT Hadji Kalla Kolaka branch is quite good, even though it has fulfilled the elements of responsibility

accounting and there are still several shortcomings. (1) The organizational structure established by PT Hadji Kalla Kolaka Branch is clear about the authority and responsibility in each division. (2) The performance measurement process used is a bottom up approach. (3) Evaluation the performance of PT Hadji Kalla Kolaka Branch is carried out once a year. (4) The company implements a reward and punishment system. Rewards are given every month. However, in giving punishment the company is said to be lacking in duties.

Keywords: Responsibility Accounting, Revenue Center, Manager Performance Assessment

Analyzing the Social-Emotional Climate Approach in English Class Management at SMA Negeri 1 Samaturu

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Abstract

Background and Aims: the students of SMAN 1 Samaturu stated that the English teacher was good at teaching. The researchers decided to conduct this study to find out how the English teacher of SMAN 1 Samaturu built a good socio-emotional climate in the classroom during English lessons. The research question of this study was "How did the English teacher create a conducive and quality classroom climate in the teaching and learning process?". **Method:** this research implemented descriptive qualitative method to carry out the research. The researchers collected the research data by employing two research instruments, namely interview guidelines and field notes. The teacher was interviewed on 24th of January 2022, and he was observed on three different occasions in the classroom. The collected data from both instruments were then analyzed by conducting data reduction, data display, and drawing conclusion. **Result:** it was found out that the teacher took six steps to create a positive social- emotional climate in the classroom: (1) letting students think independently by eliciting knowledge. The teacher emphasized that the students were the center of the learning process; (2) appraising students who actively participated during the teaching and learning process in the classroom. The teacher gave a little compliment to students but it had a big impact on them; (3) allowing students to pose questions, answer or respond to the questions, or give critics to the teacher; (4) encouraging students to study English harder and reminding

them of its importance; (5) supplying students with materials that can improve their motivation to learn both inside or outside the classroom; (6) finding out what learning materials that the students wanted to learn. The teacher gave students extra study materials.

Conclusion: those six steps were effective to create a good social-emotional climate between teachers and students in the classroom.

Keywords: emotional, classroom management, social

Application of Expert Systems in Mining

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Abstract

Background and Aims: Mining is a vital sector in the Indonesian economy, requiring constant optimization to enhance efficiency. Expert systems, knowledge-based technology that simulates human reasoning capabilities, have demonstrated their potential in supporting the mining sector. Specifically, the application of expert systems in diagnosing damage to heavy equipment provides innovative solutions to address operational challenges. **Methods:** This system is designed to identify, analyze, and give recommendations on potential damages using data from sensors on the heavy equipment. **Results:** With high diagnostic accuracy, these expert systems minimize downtime, ensure the optimal performance of heavy machinery, and reduce maintenance and operational costs. **Conclusion:** As a result, the sustainability and productivity of the mining sector can be better guaranteed with this technology.

Keywords: Mining, Expert System, Damage Diagnosis, Heavy Equipment, Efficiency, Productivity

Application of Logan Avenue Problem Solving (LAPS) Model – Heuristics to Improve Class XI Science Physics Learning Outcomes Among Kolaka State High School 2 Students

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Abstract

Background and Aims: The low learning outcomes of physics students in grade XI science at Sekolah Menengah Negeri 2 Kolaka are caused by several factors, including the lack of problem-solving skills of students in learning physics, besides the lack of teachers using innovative learning models, this has a negative impact on students, namely students tend to be bored and passive in following the physics learning process, moreover physics subjects are one of the difficult materials among school students intermediate. The purpose of this study is to improve the physics learning outcomes of grade XI science students of State High School 2 Kolaka through the Logan Avenue Problem Solving (LAPS) – Heuristics learning model. **Methods:** The method used is Classroom Action Research (PTK). A total of 17 students, the instruments in the study used observation sheets and learning outcome tests. **Results:** The results showed that student learning outcomes improved after applying the Logan Avenue Problem Solving (LAPS) model – Heuristics where student learning outcomes before applying the Logan Avenue Problem Solving (LAPS) – Heuristic model with an average value of 79.05 while in student learning outcomes after applying the learning model in cycle I the average student score was 81.29 and in cycle II the average score was 81.29 and in cycle II the average score was Students increased to 95.52. **Conclusion:** It can be concluded that

by applying the Logan Avenue Problem Solving (LAPS) -
Heuristic model can improve students' physics learning outcomes.

Keywords: Logan Avenue Problem Solving (LAPS) learning model
- Heuristics and Learning Outcomes

Application of the Moral Reasoning Model to the Courage of Expressing Opinions Through Subjects PPKn

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Abstract

Background and Aims: this research aims to determine the influence of Moral Reasoning on the courage to express opinions in the Civics subject of class IX students at SMPN 3 Tinondo. **Methods:** this research is a type of quantitative research using experimental methods. In this experimental method, researchers used a true experimental design. This research variable consists of independent and dependent variables. The use of the moral reasoning learning model as the independent variable, and the courage to express opinions in class IX PPKn subjects at SMPN 3 Tinondo as the dependent variable. The research population was all classes at SMPN 3 Tinondo, totaling 75 students. The sample in this study was class IX which consisted of two classes, namely class IX (A) with 13 students and class IX (B) with 15 students. The sampling technique in this study used non-probability sampling with the sampling technique using purposive sampling. In this study, data collection techniques used a questionnaire, observation, and documentation. Questionnaire to measure students' ability to express opinions using the post-test. The data analysis technique uses the t-test, which has previously been known for its homogeneity and normality. **Results:** The average score for the experimental group was 163.13 (one hundred sixty-three point thirteen) and for the control group was 126.69 (one hundred twenty-six point sixty-nine). In hypothesis testing commonly called the t-test, the use of the learning model

influences the courage to express students' opinions, where the significance results are $0.004 < 0.005$ (less than 5%). Based on the result of this research, the uses of the moral reasoning learning model greatly influence the courage to express options. **Conclusion:** The use of the moral reasoning learning model provided by the teacher can influence the courage to express opinions in students in class IX of SMP Negeri 3 Tinondo.

Keywords: courage to express opinions

Community Participation in Village Development in Kukutio Village, Watubangga District, Kolaka Regency (A Study on Village Infrastructure Development)

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Abstract

Background and Aims: The objective of this research is to ascertain the level of community participation in village development in Kukutio Village, Watubangga District, Kolaka Regency. **Methods:** This research utilizes a qualitative descriptive research method with a total of 9 informants. Data collection techniques employed include observation, direct interviews, and documentation. The data analysis technique involves data collection, data reduction, data presentation, and drawing conclusions. **Results:** The research findings reveal that community participation in Kukutio Village, Watubangga District, Kolaka Regency, in the context of development, is reasonably well-established. Community participation in development planning is evident in the form of active engagement in the generation of ideas and contributions during the village-level development meetings (musrembang). However, it is noted that some community members may be absent due to work-related reasons. Furthermore, community participation in the implementation phase takes various forms, including financial contributions, donations of assets, provision of labor, and the application of skills.

Nonetheless, there are individuals who are willing to contribute to development voluntarily, although not all community members are able to do so. In Conclusion, community participation in oversight is facilitated through the Village Consultative Body (BPD), which represents the community in monitoring activities. Moreover, the community participates in oversight through the village's social media channels, which serve as platforms for disseminating information to the community. The government budget is also monitored and communicated to the community through billboards detailing the allocation of funds for development. **Conclusion:** Based on the results of the research above, it can be concluded that community participation in development in Kukutio Village, Watubangga District, Kolaka Regency is going quite well, which can be seen in Planning, Implementation and Supervision..

Keywords: Participation, Community, Development

Community Participation In Water Facilities Development Clean Pipelines In Mulaeno Village, District Central Poleang Bombana District

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Abstract

Background and Aims: Community Participation in Development in Mulaeno Village, Poleang Tengah District Participation in Bombana Regency. This research aims to find out how community participation in development in Mulaeno Village, Poleang Tengah District, Bombana Regency participates. The existing development program aims to improve the welfare of Village communities and the quality of human life as well as overcome poverty through fulfilling basic needs, developing Village facilities and infrastructure, developing local economic potential and utilizing natural resources. **Methods:** This research uses descriptive research methods with a qualitative approach. The data used in this research consisted of secondary data and primary data sourced from 12 informants. Data collection techniques are interviews and documentation. The data analysis technique is qualitative using data reduction, data display (presentation) and drawing conclusions. **Results:** The research results show that community participation in development has not been active due to a lack of appeals or outreach from the Village government to invite the community to participate actively in all planning, implementation, maintenance, evaluation and in enjoying the results of development. **Conclusion:** As well as the lack of public awareness of the importance of being actively involved and participating in every development in the village in order to realize development that is in accordance with the wishes and needs of the community.

Keywords: Community participation, development

Cultural Language Politeness in the Teaching and Learning Process as Local Wisdom and Resources for the Development of Coastal Areas

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Abstract

Background and Aims: The culture of polite language has local wisdom values and resources for developing coastal areas still need to be noticed. This culture is the use of language politeness patterns that students use when they present their papers in class. This study aims to describe the cultural themes of language politeness in the teaching and learning process in the classroom so that face threats can be avoided. **Methods:** The concept of 'face' threat refers to Brown and Levinson's politeness theory, which consists of positive and negative faces. The negative face is claimed as the basis of the individual's territory that must maintain the rights not to be disturbed; the positive face is the desire to be appreciated. Research data was obtained through audio recordings of presentation papers presented by students in class. The data were analyzed using four stages of Spradley analysis consisting of (a) domain analysis, (b) taxonomic analysis, (c) component analysis, and (d) theme analysis in the context of the presenter presenting his paper and after presenting his paper. **Results:** The research findings consisted of general findings, namely the culture of using impersonality, referrers, hedges, and plural first persona pronouns. At the same time, specific results included the culture of using greetings, honorifics, and religious terms. **Conclusion:** Thus, it can be concluded that descriptions of cultural themes through using patterns of language politeness in classroom learning which include the influence of distance, power, certain cultures, and religious factors are analyzed through four stages of Spradley's

analysis can be used as local wisdom and alternative resources in the development of resources in coastal areas in the avoidance of face threats.

Keywords: Language Politeness Culture, Face Threatening Acts, Local wisdom, Teaching and learning process, Ethnography

Decision Support System for Determining Zakat Recipients Multi Objective Optimization based on Ratio Analysis (MOORA) Method (Case Study: BAZNAS Kolaka District)

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Abstract

Background and Aims: The National Amil Zakat Agency (BAZNAS) is a zakat management organization formed by the government. BAZNAS is domiciled in each district/city, one of the BAZNAS that stands at the city level is BAZNAS Kolaka Regency. At this time the process of determining zakat recipients at BAZNAS Kolaka Regency is to assess directly by looking at the data provided by prospective zakat recipients when applying to become zakat recipients. Then the Utilization Section staff will directly assess the data submitted as material for consideration when conducting a meeting to verify the determination of zakat recipients. Conventional determination of prospective zakat recipients and the absence of transparency in the process of determining potential recipients of zakat results in subjectivity in determining zakat recipients which is unavoidable. This creates jealousy for people who are considered worthy of receiving zakat but because of the subjectivity of these people are not selected as zakat recipients. Therefore it is necessary to make an application that can help Kolaka Regency BAZNAS in determining zakat recipients, namely a decision support system.

Methods: One of the methods contained in the decision support system is Multi Objective Optimization on the basis of Ratio Analysis (MOORA). The MOORA method is a method that uses calculations the minimum and very simple. This method has a

high level of selectivity good at determining an alternative. The approach taken by MOORA is defined as a process simultaneously to optimize two or more conflicting on several constraints. The MOORA method is easy to understand and flexible in separating objects to the process of evaluating decision weight criteria. income criteria, number of dependents, home ownership, power electricity, and completeness of files. The MOORA method also has good level of selectivity because it can determine objectives and criteria conflicting, namely criteria that are beneficial or not profitable (cost). **Results:** Based on the results of research, determining zakat recipients uses the method MOORA at the Kolaka Regency Amil Zakat Agency in Polinggona District with a quota of 2 people with alternative data of 3 people, namely Lisman, Suardin and Latif. It was declared that 2 people were worthy of being recipients zakat, namely Lisman with a value of -0.0382 and Suardin with a value of -0.3052 and 1 person was declared unfit to be a zakat recipient, namely Latif with value -0.3089. **Conclusion:** Results of black box testing, it can be concluded that the Support System is Decision on Determining Zakat Recipients at the National Zakat Amil Agency Kolaka Regency can provide recommendations for zakat recipients and free from program errors and ready to use.

Keywords: BAZNAS, MOORA Method, SPK

Development of the Sanskerta Course Syllabus at Hindu Religious High School (STAH) Bhatara Guru Kendari

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Abstract

Background and Aims: Remembering diverse cultures and backgrounds as well as the characteristics of the students at Bhatara Guru Kendari High School of Hinduism (STAH). As input in the system learning, and on the other hand there are demands for the learning process capable producing quality graduates, then the learning process must selected, developed, and implemented in a way flexible and varied with fulfill criteria standard. To conceptual nature of the learning process flexible and varied need applied to all path, type and level education, incl syllabus eye studying Sanskrit at Bhatara Guru Kendari Hindu Religious College (STAH). The purpose of this study was to knows the steps to develop the syllabus of Sanskrit course to be in accordance with the standards in the independent learning curriculum. **Methods:** This is an quantitative study using primary data and secondary data sources: There are three type informant in research This that is informant key, informant expert (main), and informant incidental (supporting). The techniques for data collection were literature study, observation, interviews, and documentation. The techniques for data collection were literature study, observation, interviews, and documentation. All data that have been collected was analyzed by reducing, presenting, and concluding techniques. **Result:** The result of this study found that there were several steps to develop the course syllabus of the Sanskrit, were: 1. Identification the identity (consisted by the institution name, the name of course, the course code, credits, as well as semester); 2.

Identification the Course learning outcomes (CPMK); 3. Identification the second learning outcomes (Sub-CPMK); 4. Identification the learning materials; and 5. Identification the references and requirement. **Conclusions:** According to the result of this study, it could be concluded that the steps for developing the syllabus of Sanskrit courses should be done well to reach the learning outcomes, the structured learning plan, regular learning progress, and reaching the high motivation of study.

Keywords: Syllabus development, Sanskrit Course

E-Government Based Administration Services (Study of Tondowolio Village, Kolaka Regency)

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Abstract

Background and Aims: Digitalization of administrative services in Tondowolio Village Since 2019 it has begun with various dynamics that influence the development of optimizing the implementation of E- Government at the local level. For this reason, the implementation of E-Government based administration services is an interesting research focus to study in Tondowolio Village, Tanggetada District, Kolaka Regency as form of application of E-Government in local scale government systems. **Methods:** Research method was carried out using qualitative methods through observation and interviews with research informants, namely village officials, website operators and the community and collecting primary data and secondary data which were analyzed descriptively qualitatively. **Results:** Research findings show that E-Gov-based administration services are carried out using village websites as a means of public administration services which have been implemented since 2019, supported by Tondowolio Village government policies, in the form of policies related to budgeting for website development, providing website operators, and various outreach on the use of webstie-based administration services, namely; tondowolio.opendesa.id. Apart from that, the village government is increasing capacity The internet network at the village office is in the form of WiFi and electronic facilities that help provide services to the community easily and for free. Explicitly, the implementation of E-Gov based administration services brings demand side benefit values, namely for the government and society, namely the government can carry out

government functions in an accountable, transparent and optimal manner while the public can enjoy public services that are easy, fast, precise, free and of good quality. **Conclusion:** The implementation of website-based administration services should require the development and adjustment of systems and community understanding in an even and sustainable manner, therefore the Tondowolio village government really needs to increase the capacity of the website to accommodate various complete service features and actively socialize them to the community evenly.

Keywords: Administrative Services, E-Government Tondowolio village

Enhancing Vocabulary Acquisition Via The Observe and Remember Game

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Abstract

Background and Aims: Vocabulary is the set of words that a person or group of people know or use. It is the basic building block of language and is essential for effective communication. There are many ways to improve vocabulary acquisition, including the Observe and Remember Game. The Observe and Remember Game is a fun and engaging way for students to learn new vocabulary and can help students to develop their visual memory and their ability to recall information. The purpose of this research was to enhance students' vocabulary comprehension through the use of the observe and remember game. **Methods:** The sample for this research was the second-grade students at SMPN 1 Watopute. These students were chosen due to their need for improvement in vocabulary mastery. The design of this research was Classroom Action Research (CAR). The design followed a specific set of actions, namely: preliminary research, planning, action, observation, analysis, and reflection in each cycle. To obtain data, the researcher used a combination of three data collection instruments: interviews, observation sheets, and vocabulary tests. **Results:** The result of the study shows that the researcher required two cycles to complete this study because the first cycle did not meet the minimum completion requirement of 80%. In other words, the researcher was unable to achieve the desired improvement in students' vocabulary mastery in the first cycle. As a result, the researcher conducted a second cycle, in which students' vocabulary mastery was significantly improved, with a

completion rate of 91.6%. Additionally, students' engagement, courage, and cooperation all improved significantly by the end of the second cycle. **Conclusion:** Therefore the study shows that observe and remember game is one of the most effective technique to enhance vocabulary acquisition as well as the students' behaviour in the classroom.

Keywords: Observe and Remember Game, Vocabulary

Exploring Students' Perspective on using Blended Learning in Listening Skill

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Abstract

Background and Aims: As a combination of online and traditional instruction blended learning is currently exist as feasible component in teaching and learning process. This study attempted to explore students' perception using Blended Learning Web-Based model in Listening skill. **Methods:** The sample consist of 28 students at second semester of English Department. After teaching the students using a combination both online and face to face instruction, the researcher distribute 10 open-ended questionnaire which consist of three categories such as; students' behavior toward Blended Learning Web-Based model, the learning process in the classroom, and the benefit of Blended Learning Web-Based model for the students. Data was analyzed using descriptive qualitative. **Results:** The result indicated that, the majority of students had positive attitudes toward both the online and face to face mode of their blended courses. They did, however, express some reservations about specific technical aspects of the online mode, with internet connectivity being the primary concern. Notably, the students' main suggestion was to address these technical difficulties. **Conclusion:** It is important to note that this study only included students from a single study program, so the findings should not be generalized. Future research should compare students' preferences for various blended course formats and examine how these preferences correlate with students' academic performance.

Keywords: Blended Learning, Web-Based Model, Students' Perception, Listening Skill

Exploring The Correlation between Watching English Movie and Student's Vocabulary Achievement at the Second Grade of SMAN 10 Bombana

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Abstract

Background and Aims: The habit of watching English movies provides an opportunity to learn the language of vocabulary, get new vocabularies and find lots of information about grammar to help one's language skills. This research aims to analyse the correlation between students habit in watching English movie and vocabulary achievement at the second grade of SMAN 10 Bombana. **Methods:** This research employed correlation research. The population is second grade (XI MIA 1) from SMAN 10 Bombana, the sample taken using purposive sampling technique gaining 31 students of the second grade. The research used questionnaire test and vocabulary test as a research instrument. There are three sessions in collecting data namely distributing the questionnaires, giving time to watch the animated films, and distributing vocabulary tests. To analyze the data researcher calculating the individual score of students' vocabulary achievement score, classifying the student's responses in questionnaire of student's habit and calculating the correlation using Pearson Product Moment formula. **Results:** The result of the analysis showed that there is significant relation between student habit in watching English movie and vocabulary mastery. The value $X=2143$ and $Y= 2020$ produce $r = 0,216$ meaning that there is significant correlation (weak correlation) between student habit in watching English movie and vocabulary achievement. It is proved by the value of product moment coefficient which shows that $r > 0.01$ which means there is a correlation between the student's habit

in watching English movies with their vocabulary achievement. **Conclusion:** The conclusion is that there was no significant correlation between students' habit watching English movie and students' vocabulary achievement. It was proved by the score of students' watching English movie habit with 74 % and students' vocabulary achievement 58,06 % which means alternative hypothesis H0 was accepted and hypothesis H1 was rejected because the result of r calculation was lower than r-table (0.216).

Keywords: Habit, Watching Movie, Vocabulary Achievement

Extrovert and Introvert Student Thinking Process In Solving Mathematics Problems

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Abstract

Background and Aims: students' thinking processes in solving problems can be influenced by various things including personality types, namely extroverts and introverts. The purpose of this research is to describe the thinking processes of extrovert and introvert students in solving math problems. **Methods:** This research is a qualitative descriptive study. The instruments used were a personality type questionnaire, a Problem Solving Test (TPM), and an interview guide. This research was conducted on students of MTs Kudrinuur with equivalent abilities. **Results:** The results of the study show that the thinking processes of extroverted and introverted students can fulfill all the indicators of the thinking process at the problem solving stage according to Polya. In addition, between extrovert and introvert students each have different problem-solving strategies when dealing with math problems. **Conclusion:** In this case, it can be concluded that students' thinking processes in solving math problems are introverted students tend to be brief in expressing answers and reasons for work, but extrovert students tend to be more active in uncovering answers and reasons for work. In problem-solving strategies, extrovert students tend to use simple methods fast ways to solve problems, while introvert students tend to use complete and detailed methods to solve problems and pay great attention to the little things in each answer.

Keywords: Thought Process, Personality Type, Mathematical Problems

Gamification Learning integrated with Local Wisdom based on Character Education, is There an Effect on Problem Solving Ability?

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Abstract

Background and Aims: Gamification learning is learning that use gamified elements that can increase students' motivation, enjoyment and engagement in learning. It can be integrated with local wisdom in Central Sulawesi as part of improving the character of students so that they are not easily influenced by outside culture in facing the industrial revolution 4.0. The aim of this study was to determine the description of students' problem solving skills and the effect of gamification learning on students' problem solving ability. **Methods:** This research is a type of quasi-experimental research with a quantitative approach. The research design uses a posttest only design, where the measurement is done only by using the posttest value. The population consisted of 87 people. The research sample was selected based on purposive sampling technique so that the total sample in this study was 56 students who were divided into 2 classes, namely 28 people in the experimental class and 28 people in the control class. The problem solving ability of the respondents was measured by giving a research journal to the respondents. Respondents were asked to analyze the journal by paying attention to the indicators of problem solving skills which include: the ability to define the problem, find strategies, write hypotheses, evaluate solutions, implement solutions, and evaluate the solution. Scoring for each indicator of problem solving is done using the problem solving

ability rubric developed by The Association of American Colleges and Universities. Data analysis used descriptive and inferential data analysis. **Results:** the results of descriptive data analysis showed that the average value of the experimental class problem solving ability was 80.36 higher than the control class which was 72.86. The results of inferential data analysis with independent sample t-test showed that the significance value of the data was 0.001 (<0.05). **Conclusion:** There is an effect of gamification learning integrated with local wisdom based on character education on students' problem solving ability.

Keywords: Gamification Learning, Local Wisdom, Character Education, Problem Solving Ability

Information System for Submitting Employee Leave at PT. Satria Jaya Sultra Site Tapunopaka Based On Website

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Abstract

Background and Aims: PT Satria Jaya Sultra is a company engaged in the business of Contracting, Mining, Heavy Equipment Rental. PT Satria Jaya Sultra has thousands of employees spread across several regions, depending on the location of the company's project, one of which is at PT Satria Jaya Sultra Site Tapunopaka. Every employee has the right to take leave, based on observations made by the author that the problem that occurs is that there is no computerized system where the process of applying for leave is done manually which takes a long time. In addition, employee leave usually exceeds the expiration time of the leave, and the media for storing employee leave data still uses physical documents so that it is vulnerable to damage and loss of data. The purpose of this research is to create an application for Employee Leave Submission Information System at PT Satria Jaya Sultra Website Based which is systematic, structured and directed.

Methods: The research method used is a prototype system development model consisting of gathering requirements, design process, building prototypes, evaluation and improvement. Data collection is carried out by a direct interview process with PT Satria Jaya Sultra Site Tapunopaka related to system requirements.

Results: The results obtained are that the Information System for Employee Leave Submission at PT Satria Jaya Sultra Website-Based can facilitate employees in processing leave data and accepting leave data. Based on the results of black box testing, that building a Website-Based Employee Leave Submission

Information System at PT Satria Jaya Sultra Site Tapunopaka is free from programming errors and has run functionally and produces information as expected. And for UAT testing, 88.9% of respondents agreed with the Excellent category. **Conclusion:** It is hoped that the results that have been obtained from this research can be a solution to the problems faced.

Keywords: Information System, Leave Request, Website

Investigating the Potential Economic Benefits of Grouper Fish Resources in Kolaka District, Southeast Sulawesi, Indonesia

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Abstract

Background and Aims: Fishery resources have the nature of common property; that is, the use of resources can be used simultaneously by more than one individual. Grouper is one of the fisheries resources that has high economic value. This high price has caused the exploitation of grouper fish to increase from 163 grouper species worldwide; 12% (20 species) are threatened with extinction, and 13% (22 species) are considered near threatened based on IUCN Red List criteria. On the other hand, this fish is also a part of the ecological chain in its habitat in the coral reef ecosystem. Grouper fish inhabit coral reef ecosystems and shallow rocky waters as their primary habitat. This research aims to see the extent of the economic potential of grouper in Kolaka Regency and identify its distribution areas. **Methods:** the study location was in the marine waters of Bone Bay, and observations were made based on the place where Tanggetada fishermen catch grouper fish every day. The analysis was carried out descriptively based on the results of field observations and using supporting data from relevant sources based on the study topic. **Results:** the potential for grouper fisheries in Kolaka Regency is quite significant. However, the catch per unit effort or catch per unit effort (CPUE) of grouper

fluctuates yearly and experiences. A significant increase occurred in 2014, then decreased in 2016, and increased again the following year; in 2017, there was a decrease in 2019, and there was an increase again in 2020 and 2021. **Conclusion:** more grouper fishing occurred in Kolaka Regency waters due to high fishing activity carried out by local fishermen. Based on this data, management efforts must be carried out immediately to maintain the sustainability of the grouper fish resource stock in Kolaka Regency.

Keywords: fisheries, grouper fish, potential, utilization

Language Acquisition of Boys and Girls

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Abstract

Background and Aims: Language acquisition occurs at the threshold of consciousness. Language acquirers are aware of the fact that a person uses language to communicate. The stages in which someone can speak are generally carried out by the process of language acquisition in children, especially in early childhood, through their first language. The acquisition of a first language in boys and girls certainly has stages and differences. This is the background to which this research was carried out with the aim of finding out the causes of differences in language acquisition in boys and girls. **Methods:** This research is a type of qualitative research. The data in this study are in the form of words or phrases with the data source being the speech of early childhood boys and girls aged 1-2 years. The data collection technique is in the form of free, skilful observation using note-taking and interviews. **Results:** Based on research conducted, boys have less language acquisition than girls, this is proven by the amount of vocabulary spoken. Boys show the use of 47 words while girls show the use of 60 words. The results of the research show that the factors causing differences in language acquisition in boys and girls are influenced by intense social interactions between parents, families and children. Therefore, it is very important for every parent to continue to look after and provide stimulus to their children. With more vocabulary being heard, children will have more and more vocabulary or vocabulary indirectly. In other words, their language acquisition comes from the surrounding environment, especially from the family environment. **Conclusion:** Teaching

from the family will shape the child's language. The language acquired by children is not only used to convey desires but also to communicate with their environment.

Keywords: Early Childhood, Language Acquisition, Language Education

Magister Further Education as The Basis for Human Resource Development at Islamic Boarding School Al-Mawaddah Warrahmah Kolaka

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Abstract

Background and Aims: The Islamic Boarding School of Al-Mawaddah Warrahmah in Kolaka has become an important educational institution in shaping high-quality human resources. In the effort to continuously improve the quality of education and human resource development, postgraduate education is recognized as a crucial foundation. This research aims to investigate the role of postgraduate education in human resource development at Pondok Pesantren Al-Mawaddah Warrahmah Kolaka. **Methods:** The study employs a qualitative approach, utilizing interview and observation techniques with teaching staff and postgraduate students at the present. The collected data is analyzed using content and thematic analysis to identify key themes related to the influence of postgraduate education on human resource development. **Results:** The research results indicate that the Al-Mawaddah Warrahmah Kolaka Islamic Boarding School Foundation facilitates its employees to pursue further education by providing educational allowances for those who pursue studies at the Master's or doctoral level. Postgraduate education has a significant impact on human resource development at Pondok Pesantren Al-Mawaddah Warrahmah Kolaka. The Master's program offers opportunities for teaching staff to deepen their knowledge and skills in the fields of education and educational institution management. Additionally,

postgraduate students gain a deeper understanding of theories and practices related to education and pesantren management. This positively affects the teaching abilities and leadership of the teaching staff, as well as personal and institutional development.

Conclusion: Despite the significant benefits of postgraduate education, its implementation faces several challenges, such as limited access to campuses offering postgraduate programs, particularly in the Kolaka Regency. Another challenge is financial limitations, as postgraduate education programs require a considerable budget.

Keywords: Magister, Education, Human Resource Development

Mapping of Student Favourite Courses: a Case Study of Competence, Performance, and Information Literacy Abilities

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Abstract

Background and Aims: Every learner has their own expectations, their goals are largely determined by how they like and develop their abilities. There are many issues that arise in the education process including competence, performance, and information literacy. **Methods:** This research is descriptive research. The tendency of students who only like certain courses will make them less competitive and have poor performance, and the factors that cause this gap are the ability of lecturers to teach courses, complicated course content, and students having a poor foundation. Personality, pedagogical, social, and professional competencies are aspects of competence that must be possessed by lecturers. freedom to choose to develop their abilities is a right, but without realizing it, the demands of the times require them to master all courses in the study program they are undertaking. This orientation, which is less relevant to the nation's desire to produce a reliable and resilient generation, certainly opens up space for the need for awareness in undergoing lectures professionally and responsibly. **Results:** The results of the study obtained information The better the competence and performance of lecturers, the greater the possibility of student enthusiasm in participating in the learning process. Information literacy skills also have an impact on student's assessment of the courses they will take. **Conclusion:** Lecturer competence is important to accommodate the process of

student achievement. The output obtained if the lecturer has good personality competence, namely discipline, responsibility, and normative values, will have an impact on the psychology of students because they tend to feel confident in what is taught by the lecturer. Pedagogic competence has an impact on performance, namely understanding student character, learning theory, curriculum development, learning process, and learning evaluation has an impact on mapping courses that students like.

Keywords: Mapping, courses, competency, performance, Information, literacy

Performance of Religious Courts in Handling Divorce Cases in Kolaka Regency

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Abstract

Background and Aims: The objective of this research is to understand and describe the performance of the Religious Courts in handling divorce cases in Kolaka Regency. **Methods:** The research method employed in this study was analyzed using a qualitative descriptive technique. The research was conducted at the Religious Courts of Kolaka Regency. The informants in this research included the Chairperson, Vice Chairperson, Judges, Court Clerks, Junior Legal Clerks, Junior Request Clerks, Jurists, and members of the divorced community. The types and sources of data used in this research were primary and secondary data. **Results:** Based on the research findings, it was observed that, in terms of productivity indicators, the processing of divorce case applications by the staff was slow, resulting in a significant delay for divorce litigants to proceed to the next stage. Regarding service quality indicators, the procedures offered were slow, and there was no clear timeframe provided by the Religious Courts of Kolaka to divorce applicants. The responsiveness indicator showed a lack of certainty in the resolution timeline by the Religious Courts, with court sessions held only twice a week, specifically on Mondays and Tuesdays. In terms of responsibility indicators, efforts were made to address issues arising from the community, from the initial application of divorce cases to the trial process. The

accountability indicator was effectively implemented by adhering to the performance assessment target of the Religious Courts of Kolaka or SKP (Employee Performance Targets), which are evaluated annually, with performance targets established at the beginning of the year and assessed at the end of the year. **Conclusion:** The Kolaka Religious Court needs to improve its performance in handling divorce in Kolaka Regency so that the divorce rate can be handled well.

Keywords: Performance, Handling, Divorce

Poverty, Unemployment and Economic Growth in Sulawesi Tenggara

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Abstract

Background and Aims: Economic growth is the main indicator of social welfare, while poverty and unemployment are two social problems that often become obstacles to sustainable economic development. Poverty results in limited access to education, health care, and capital necessary for economic productivity, which can hinder human capital potential. Unemployment can also hurt growth by reducing consumer spending and investment. This study was carry out to analyze the effect of poverty and unemployment levels on economic growth in Sulawesi Tenggara.

Methods: The research method that was used in this study is quantitative method. This study employed panel data regression with fixed effect model. This study used secondary data from 17 districts and cities in Sulawesi Tenggara that was observed from 2017-2022. The data was collected through online searches and documentation studies.

Results: Based on the result of T test, the study found that the variable probability value of poverty (X1) is 0.0005. This probability value is smaller than 0.05 so it can be concluded that the variable (X1) has an effect on the variable (Y). The variable probability value of unemployment (X2) is 0.9680. This probability value is greater than 0.05 so it can be concluded that the variable (X2) has not effect on the variable (Y). Based on the result of F test the study found that the variable probability value of poverty (X1) and unemployment (X2) is 0.0000. This probability value is smaller than 0.05 so it can be concluded that the variable (X1) and (X2) has an effect on the variable (Y).

Conclusion: The Result of this research is the poverty partially has

a significant effect on economic growth in Sulawesi Tenggara. Unemployment partially has not a significant effect on economic growth in Sulawesi Tenggara. Poverty and Unemployment simultaneously have the significant effect on economic growth in Sulawesi Tenggara.

Keywords: Economic Growth; Poverty; Unemployment

Profile of Abductive Reasoning Ability of Junior High School Students in Solving Problems Based on Gender Differences

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Abstract

Background and Aims: Reasoning is a natural thing to be understood by students at every level of education. The purpose of this study was to describe junior high school students' abductive reasoning in solving mathematical problems based on gender differences. Abductive reasoning in this study refers to finding facts based on what is believed, mentioning several reasonable strategies to solve problems, choosing a good strategy with logical reasons, implementing the chosen strategy. **Methods:** The subjects in this study consisted of 2 students of grade VIII of junior high school. Data collection techniques were carried out by giving assignments and interviews. Data analysis techniques in this study using data reduction, data presentation and drawing conclusions.

Results: The results of this study show that male students have satisfied the indicators, is finding facts that are believed, mentioning several strategies that make sense to solve existing problems and implementing the chosen strategy. Meanwhile, female students have satisfied the indicators, is finding facts based on what they believe, choosing a good strategy with logical reasons and implementing the chosen strategy. **Conclusion:** Based on the results of this study, it was found that female students were more likely to find only one strategy in solving mathematical problems.

Keywords: abductive reasoning, mathematical problems, gender

Project Based Learning Using Tutorial Video Tasks to Improve Student Learning Competence at SMP Negeri 2 Samaturu

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Abstract

Background and Aims: The problem addressed in this research is "How can the Project Based Learning method using Tutorial Video Tasks improve student learning competence in the procedural text material at SMP Negeri 2 Samaturu?" The purpose of this research is to understand the learning process using the Project Based Learning method with Tutorial Video Tasks in improving student learning competence in the procedural text material at SMP Negeri 2 Samaturu. The expected benefits of this research is to provide a fresh atmosphere in the teaching and learning process so that students do not get bored with the methods used by teachers during instruction. It is also hoped that students will become more active in their learning. **Methods:** The Project Based Learning model is a learning model that involves students actively in problem-solving, carried out either in groups or individually, through a scientific process within a specific time frame, resulting in a product that is subsequently presented to others. Project-based learning is a learning model where students play an active role in producing real-world products or projects. **Results:** This Research has significant results or impacts on improving student learning competence in the procedural text material, including: a) The Project Based Learning model allows teachers to manage classroom learning by involving project work. b) The implementation of the Project Based Learning model challenges students to complete the given project, whether individually or in groups. c) Through group work, students are more enthusiastic

about exchanging ideas with their peers. d) Implementing the Project Based Learning model provides students with the opportunity to apply the knowledge they have in the real world. e). **Conclusion:** It creates an enjoyable learning environment, leading to both students and educators enjoying the learning process.

Keywords: Project based learning, Teks Procedure, Tutorial Video Task

Rehabilitation Assistance Program for the Elderly (ATENSI LU) at the Department of Social Affairs of Kolaka Regency

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Abstract

Background and Aims: This research aims to describe and analyze the efforts in implementing the Social Rehabilitation Assistance Program for the Elderly at the Department of Social Affairs of Kolaka Regency. **Methods:** The research method used in this study is qualitative descriptive. Data sources for this research include primary and secondary data. Data collection techniques involve observation, interviews, and documentation. The informants for this study consisted of six individuals selected through purposive sampling. Data analysis techniques include data reduction, data presentation, drawing conclusions, and data verification and validation. **Results:** The results of the research indicate that the program implementers have not been able to achieve optimal results. The suboptimal results are attributed to three variables: unclear organization and the failure of implementers to perform their duties and functions, differing interpretations by the implementers due to inadequate guidance, leading to incomplete socialization, a lack of clear technical instructions and execution guidelines, and inadequate communication between implementers and beneficiaries. Moreover, there is no fixed schedule for program activities. The research indicates that there are several challenges in the implementation of the Social Rehabilitation Assistance Program for the Elderly in Kolaka Regency. Addressing issues

related to organizational clarity, guidance, communication, and activity scheduling is essential to improve the program's performance and effectiveness in providing assistance to the elderly population. This research can serve as a valuable resource for policymakers and stakeholders seeking to enhance the program's impact and reach its intended objectives. **Conclusion:** In this research, it can be concluded that the Social Rehabilitation Assistance Program for the Elderly (ATENSI LU) at the Department of Social Affairs of Kolaka Regency has not been implemented optimally based on the three indicators used, namely: organization, interpretation and application.

Keywords: Implementation, ATENSI LU

Resolution of Village Leader Election Disputes in The Legal Regulation System in Indonesia

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Abstract

Background and Aims: Elections for village leader in Indonesia are held simultaneously in all districts/cities in Indonesia, because in every village head election activity, there are not a few results in disputes/disputes over the election of village leader. Either in Process Dispute or Outcome Dispute. Process disputes usually occur before the village head election process takes place, including the issue of determining the requirements for village head candidates, money politics black campaign, the problem of increasing the number of permanent voter lists, and the problem of determining the serial number of village head candidates. **Methods:** The Research Method in this writing is the Normative Legal Research Method, which is a process to find a rule of law, legal principles, and legal doctrines to answer the legal issues faced. **Results:** result disputes occur when the election is taking place or after the village head election is over, namely the problem of the criteria for valid and invalid ballot papers, the problem of ballooning votes, the problem of legitimacy and legal certainty. settlement of village head election disputes, either through a regent/mayor decree, or through a decision Judicial institution, namely the State Administrative Court. **Conclusion:** Of these problems, the Hierarchical Laws and Regulations have not completely accommodated the Process and Procedure for Settlement of Village Head Election Dispute in Indonesia, so a concept of rules is needed that can provide Certainty, Justice and Legal Benefit, for Justice Seekers in Village Head Election Dispute Resolution in Indonesia, namely with the aim of forming a Special

Judicial Institution for Village Head Election Dispute Resolution in Indonesia.

Keywords: Village, Leaders, Election, Settlement, Dispute

Revitalizing Values of Pancasila to Develop Student Characters in SMA Negeri 2 Luwu Utara

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Abstract

Background and Aims: This purposes of this research is to analyze how the role of teachers in schools in instilling Pancasila values in students to build character and to find out what factors influence the character development of students in schools. **Methods:** This type of research is qualitative descriptive type. The data obtained in this study were analyzed using qualitative descriptive analysis with the stages of reducing data, and drawing conclusions. Data collection techniques used were observation, interviews and documentation.

Results: The result of this research reveal was that 1) The role of the teacher in instilling Pancasila values in schools to build the character of students at SMAN 2 Luwu Utara, namely the teacher has a direct role in practicing the application of Pancasila values in everyday life which aims so that students do not only receive material practice of values in the classroom. however, it can be directly adapted in everyday life. 2) There are several factors that influence the character development of students in schools, especially at SMAN 2 Luwu Utara, namely biological factors and environmental factors as evidenced by the teacher giving real examples and freedom for students to choose extracurricular activities that they like while still supervising and providing direction. But freedom is not without constraints. **Conclusion:** There are still many students who do not comply and many still violate school regulations.

Keywords: Revitalization, Value, Pancasila

Size Effect of Developing General English Modules on the Professionalism of Lecturers at Sembilanbelas November University, Kolaka

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Abstract

Background and Aims: Increasing the professionalism of lecturers is used as the focus of research because Hattie (2009) explained that the education system consists of several elements, and all these elements, the teaching element, is the main element that determines educational success. Departing from this motivation, the researcher carried out the research titled Development of English General Basic Course Modules (MKDU) to increase the professionalism of lecturers at USN Kolaka. **Methods:** This research was conducted on 3 USN Kolaka English education study program lecturers who taught English MKDU. In determining the lecturer sample, the sample was selected considering the population of MKDU English lecturers who were heterogeneous in terms of possession of lecturer certification, so one lecturer represented each lecturer stratum. In this case, the researcher used available sampling, with 3 MDKU English lecturers representing their respective groups. The performance of the three lecturers was assessed by the Head of Study Program and two senior lecturers using Danielson (2013) and Marzano (2017) teaching performance evaluation instrument. Meanwhile, to measure the value of the influence of using modules on increasing lecturer professionalism, the effect size test was carried out using Cohen's D analysis. **Results:** Module development had shown a significant influence on increasing the professionalism of MKDU English lecturers. It can be seen from the results of the Cohen D test, where the calculated d value is 10.312. This situation means that the influence

of using the module on the professionalism of MKDU English lecturers can be interpreted as having an influence. **Conclusion:** Through the development of the English MKDU module, there has been an increase in the level of professionalism achieved by lecturers, from lecturers with performance capabilities at the Proficient level to lecturers with performance capabilities at the Distinguished level.

Keywords: English Education, lecturer professionals, module development

Student Pick Up Application At Salafiyah Al-Amin Mawasangka Islamic Boarding School Using Dijkstra Algorithm

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Abstract

Background and Aims: School transportation services are a means of transportation for students to smooth the teaching and learning process, because students will feel safe and can also enter on time. One school that has provided transportation services in the form of school buses is the Salafiyah Al-Amin Mawasangka Islamic Boarding School. However, regarding the student shuttle service, there is currently no optimal route for picking up students. So the problem that occurs is that it takes more time when picking up, drivers have difficulty determining the path, drivers don't know which students are ready to be picked up, and students don't know whether the school bus is operating or not. **Methods:** This study proposes an application that can help students and drivers to communicate during school pick-up Data collection used in making the system using 3 ways namely observation, interviews, and literature study. **Results:** The results of making this application are that when operating it can determine the nearest student gathering point, drivers can find out which students are ready to be picked up at a gathering point, drivers can send notifications regarding information the bus is not currently operating and can provide guidance on the path to be taken using

the Dijkstra algorithm. Dijkstra's algorithm is an algorithm used to solve the shortest distance problem for a directed graph by choosing the weight of the shortest node to determine the shortest path. **Conclusion:** The application has been tested using the black box testing method and the results obtained show that the application is in accordance with expectations and from the results of the time comparison between before and after using Dijkstra's algorithm, the application has a time difference of 796 seconds or 13.2 minutes.

Keywords: Application, student pick-up, dijkstra algorithm

Teacher Professional Development Lesson Study Based in Elementary School with Triple Helix Support

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Abstract

Background and Aims: This research is based on the phenomenon of basic education in areas around industry which are still experiencing many challenges. One of the causes is the lack of teacher professionalism and lack of support from educational stakeholders. Therefore, this research aims to increase teacher professionalism through lesson study activities involving higher education institutions (Halu Oleo University), regional government (Kolaka Regency regional government), and Corporate Social Responsibility (CSR) PT Aneka Tambang. The three stakeholders are synergized in the form of a triple helix. **Methods:** The research method uses lesson study steps through the plan, do, see stages. This research took place in two stages. Each stage consists of plan, do, see. The focus of lesson study observations is on the teacher's ability to organize learning and student learning activities. **Results:** The research results show that the main problems of education in elementary schools are (a) low student learning outcomes and (b) low student active participation. The cause of these two things is the low competence of teachers, both in designing learning and in organizing learning. Through lesson study, these problems can be resolved as indicated by students' classical learning completeness of 100%. Likewise with learning interactions, the teacher has involved all students evenly. Through this research, the professionalism of coastal elementary

school teachers in Kolaka Regency was successfully developed through lesson study. **Conclusion:** The conclusion of this research shows that lesson study activities are able to increase teacher professional competence which is supported by the synergy of the triple helix (universities, government and industry/CSR). This research has also produced a prototype school for a piloting lesson study school using the triple helix

Keywords: lesson study, teacher professionalism, coastal schools, student learning outcomes, elementary schools

The Effect of English Conversation Video Toward Students Speaking Ability

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Abstract

Background and Aims: Speaking is one of the important skills among learners including students who learn English as a foreign language. The ability to speak English well can measure the success of learning language. The objective of this research was to find out information and data whether there is an effect of English conversation Video toward students speaking ability. **Methods:** The instrument of this research used quasi-experiment design. Where procedure such as: pre-test, treatment, post-test. The population of the research was all the second grade of students SMPN 3 Dangia. The sample of the research was class VII A SMPN 3 Dangia, consisted of 24 students based on random sampling. The researcher collected the data by giving pre-test in two classes to know students prior knowledge, giving treatment which the research conducted teaching and learning process by using English Conversation Video with the result in classroom that though by conventional technique. **Results:** The result of this research showed that there was a difference between students' speaking ability where taught by English conversation video media and students where taught by conventional technique. In experimental class, the mean score of post-test 72.33 was higher than in pre-test 35.50 in control class the mean score of pre-test was 60.50 and in post-test was 70.00. **Conclusion:** Therefore, it can be concluded that there was an effect of English conversation video media on students speaking ability at the second grade of SMPN 3 Dangia.

Keywords: English conversation, Speaking skill

The Effect of Location and Product Variety on Repeat Purchase Intention at Zona Cafe and Food Court Kolaka

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Abstract

Background and Aims: Based on the initial data obtained by the author, most consumers who make repeat purchase intentions are influenced by location and product variety, because the location is in the middle of the city center, and the products offered are varied. The aim of this research is to determine the influence of location on Repeat Purchase Intention in the Zona Cafe and Food Court Kolaka and the influence of Product Variation on Repeat Purchase Intention. **Methods:** This research is quantitative research with data collection using documentation and distributing questionnaires. The data collected in this research were all customers who had visited the Zona Cafe and Food Court Kolaka and 120 respondents were taken. Research instrument testing uses validity and reliability tests with SPSS 25. Data analysis techniques use measurement model tests (outer model) and structural model testing (inner model) with Smart PLS 4.0. **Result:** The results of this research show that location has a positive and significant effect on Repeat Purchase Intention. This is proven by the T-Count or T-Statistics which is 2.534 which is higher than the rule of thumb used which is 1.96 with a P-Value of 0.006 and Product Variation also has a positive and significant effect on Repeat Purchase Intention because the T-Count or T-Statistics value is 2.662 is higher than the rule of thumb used, namely 1.64 with a P-Value of 0.004. **Conclusion:** The conclusion of this research is that there is a

positive and significant influence between the Location variable on Repeat Purchase Intention in the Zona Cafe and Food Court Kolaka. There is a positive and significant influence between the Product Variation variable on Repeat Purchase Intention in the Zona Cafe and Food Court Kolaka.

Keywords: Location, Product Variety, Repeat Purchase Intention

The Effect of Scattegeries Games on Increasing Students' Vocabulary (Experimental Research on Class VII Students at SMP Negeri 2 Tanggetada)

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Abstract

Background and Aims: This study presented the Effect of Scattegeries Games on Increasing Students' Vocabulary (Experimental Research for Class VII Students at SMP Negeri 2 Tanggetada). The research question is there an effect of Scattegeries on increasing the vocabulary of class VII students at SMP Negeri 2 Tanggetada. The purpose of this study is to determine whether there is an effect of the Scattegeries Game on increasing the vocabulary of class VII students at SMP Negeri 2 Tanggetada. **Methods:** The research design is Quasi-Experimental using Two Group Pre-Test- Post-Test. The variables of this study consist of two variables, they are the Effect of Scattered Games as the independent variable and students' vocabulary mastery as the dependent variable. The sample is 26 students. The research instrument is the Vocabulary test (pre-test and post- test). The data collection technique in this study is pre-test, treatment and post-test. **Results:** The result is Scattegeries games have an influence on students' vocabulary comprehension. Data on students' English learning outcomes were obtained from the results of the Pre-test and Post-test in the form of multiple choices. The data shows that there is an average increase in students' English learning outcomes before it is implemented (46.34%) and (80.19%) after the Scattegeries Games learning media is applied. Then the test results based on hypothesis testing were carried out using one sample t-test statistic (one sample t-test) obtained tcount (9,972) > ttable (2,060), then H0 is rejected and H1 is accepted. **Conclusion:** it can

be concluded that the Effect of Scattegories Games on Students' Vocabulary Comprehension is effective in improving students' English learning outcomes.

Keywords: Experimental, Scattegories, Vocabulary

The Effectiveness of the Samsat Gerai Program in Enhancing Motor Vehicle Tax Compliance: A Study at the Integrated One-Stop Administration System Office (SAMSAT) in Kolaka Regency

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Abstract

Background and Aims: The objective of this research is to assess the effectiveness of the Samsat Gerai program in improving motor vehicle tax compliance at the Integrated One-Stop Administration System Office (SAMSAT) in Kolaka Regency. **Methods:** The research employs a qualitative descriptive approach to analyze the program's implementation. The research methodology is quantitative, with a sample size of 10 informants. Data sources include primary and secondary data. Data collection techniques encompass observation, interviews, and document analysis. Data analysis consists of data collection, data reduction, data presentation, and conclusion drawing/verification. Data validity is assessed based on credibility, transferability, dependability, reliability, and confirmability. **Results:** The research findings indicate that the effectiveness of the Samsat Gerai Program in enhancing motor vehicle tax compliance has not been achieved as expected. The success indicators of the program, particularly in terms of disseminating information about the program to the public, have not been effectively met. Most of the public remains unaware of the program's existence and its established goals. Additionally, the achievement of program targets has fallen short of expectations, as demonstrated by the limited interest among the

public in completing motor vehicle tax-related transactions. Satisfaction with the program has not been realized effectively, as the services provided at the Samsat Gerai have not reached their full potential. Consequently, many individuals prefer to conduct their motor vehicle tax-related transactions at the Samsat Kolaka office. The input and output levels have not yielded effective results, partly due to the limited coverage of the Samsat Gerai program, which primarily focuses on the Watubangga Sub-district, and is hindered by a shortage of service personnel and lengthy processing times. **Conclusion:** Overall, the comprehensive goal of implementing the Samsat Gerai program has not been met, as a considerable portion of the population remains unaware of its existence.

Keywords: Effectiveness, Samsat, Gerai

The Existence and Problems of the Haroa Tradition in the Community of Karae Village, Siompu District, South Buton Regency

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Abstract

Background and Aims: Haroa is one of the ancestral cultural traditions of the Butonese people which is a form of gratitude to God for the success or smooth running of a desired event or to commemorate major Islamic holidays. The haroa tradition contains religious values, social values, and cultural values. The process of carrying out haroa in the Karae Village community is usually held in residents' homes by inviting family and neighbors and sitting together in a room in the middle there is a talan (serving place) containing cakes and traditional food. However, the existence of the haroa tradition is currently in danger of being lost due to the emergence of an opinion among the young generation of Karae Village that the implementation of haroa is not important, apart from that the influence of cultural acculturation also makes a big contribution in influencing the perception of the young generation of Karae Village towards the haroa tradition. **Methods:** This type of research uses a descriptive method with a qualitative approach. Research procedures include observation, interview guidelines, and documentation. The subjects in his research included traditional leaders, religious leaders, youth leaders, and the Karae community. **Results:** The results of the research are that the existence of the haroa tradition is in danger of being lost if the meaning of the philosophical values of the haroa tradition is not well understood by the younger generation in Karae Village. One effort to preserve Buton's culture is to always implement the haroa

tradition in the midst of community life by involving the young generation of the village. Karae in every implementation. **Conclusion:** Haroa traditions provide important lessons to the next generations as local cultural heritage.

Keywords: existence, haroa tradition, regeneration

The form of Hindu Religious Education Learning in the Personality Formation of Elementary School Students at Pasraman Sekolah Minggu Prema Widya Shanti Kendari

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Abstract

Background and Aims: Pasraman Sekolah Minggu Prema Widya Shanti, is a formal pasraman in Kendari city which activities carries out the teaching and learning process of Hindu Religious Education and Character, as a solution to the implementation of Hindu Religious Education in formal schools in Kendari City, both at the level Elementary, middle school and high school level. Personality is a person's characteristics or traits which are the result of formation from their environment, both formal and non-formal. Religious studies are very important lessons in human life because they are a guide for human life. The aim of this study is to describe the forms of learning Hindu religious education in forming the personality of elementary school students at the Pasraman Sekolah Minggu Prema Widya Shanti Kendari; and uncovering the factors that inhibit the learning of Hindu religious education in forming the personality of elementary school students at the Pasraman Sekolah Minggu Prema Widya Shanti Kendari. **Methods:** This research uses a descriptive qualitative approach with non-participant observation methods, direct interviews using unstructured interview techniques and documentation methods. According to Miles and Huberman, the data obtained from the research results were analyzed using a process of data reduction, data presentation and drawing conclusions. **Results:** The results of this research show that there are two forms of learning for Hindu

religious education at Pasraman Prema Widya Shanti Kendari, namely in the classroom using various models and outside of class. The extracurricular programs such as singing, dancing, yoga and ballads. while the factors inhibiting the learning of Hindu religious education at Pasraman Prema Widya Shanti are the limited learning time which is carried out (once a week only 1 hour per class). the facilities and infrastructure are not optimal, parental support is not optimal for the Pasraman, and the number of still not enough to teach a large number of students. **Conclusion:** there are two form of the learning process those are by formal situation that the process as usually in a class and the other one is outside the class like an extracurricular of that program such as, practice for sing a religion song, dancing, traditional music and also yoga. which one those are very important for all of Hinduism people because by knowing and learn it early could increase their self-confidence as a Hindus generation.

Keywords: Forms of Hindu Religious Education Learning, Factors Inhibiting Learning

The Frequency Analysis of Mekongga Local Language Vocabulary Use: Strengthening Local Cultural Identity

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Abstract

Background and Aims: Local language vocabulary has a very important role in maintaining and strengthening the local cultural identity of a community. Cultural identity is an important aspect of the sustainability of society amid increasingly strong currents of globalization. Local languages, as a reflection of cultural identity, often face challenges in maintaining their authenticity and relevance. This study aims to analyze the frequency of use of local Mekongga vocabulary in the context of strengthening local cultural identity. **Methods:** This research uses a qualitative descriptive method. The population of this research is people who speak the Mekongga local language. The sample consisted of 50 people selected through a simple random sampling method. The instruments used were interview guides and texts. Data collection was carried out in two main stages. First, interviews were conducted with selected respondents to collect qualitative data. Second, text data in the Mekongga local language was collected from various relevant sources. Data analysis was carried out through qualitative analysis obtained from interviews and text analysis which included identifying the frequency of use of certain vocabulary, understanding the cultural meaning in these texts, as well as connecting vocabulary with the cultural context and local traditions. **Results:** The results of the study show that several traditional vocabularies in the Mekongga local language have experienced a decline in use in everyday conversation, possibly due to the influence of foreign languages and cultural shifts. However, there are still segments of society who continue to use

this local language vocabulary as an integral part of their communication. The use of local Mekongga vocabulary has the potential to strengthen local cultural identity. **Conclusion:** Cooperation between the community, educational institutions, and the government is needed to maintain and strengthen the role of the Mekongga local language in realizing a strong and sustainable local cultural identity.

Keywords: Local Language, Local Cultural Identity, Mekongga Language Vocabulary, Strengthening Traditional Culture

The Influence of Discovery Learning Model Using a Scientific Approach on Students' Representation

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Abstract

Background and Aims: Chemical representation abilities can be developed in various learning models, one of which is the discovery learning model. The Discovery Learning learning model is a series of learning activities that maximally involve all students' abilities to search and investigate systematically, critically, logically, analytically so that they can formulate their own discoveries. This study aims to determine the effect of the discovery learning model using a scientific approach on students' representation abilities in the chemistry subject matter of buffer solutions in class XI SMA Bala Keselamatan Palu. **Methods:** This research is a quantitative study with a Pre-test-Post-test Control Group Design. The population in this study totaled 44 students with two experimental classes, namely class XI MIA 1 as experiment 1 (n=22) and class XI MIA 2 as experiment 2 (n=22). The sampling technique used was saturated sampling technique where all members of the population be a sample. **Results:** The results showed that the effect of the discovery learning learning model used a scientific approach in terms of the results of the calculation of the N-Gain test in experiment 1 = 0.45 was in the medium category and experiment 2 = 0.73 was in the high category, based on the N-Gain test assessment on each level of representation ability in the pretest obtained an average macroscopic level = 0.70 in the medium category; submicroscopic level = 0.28 is in the low category; symbolic level = 0.49 is in the medium category. **Conclusion:** So it can be concluded that there is

an influence of the discovery learning model using a scientific approach and is quite effective in increasing the representation abilities of class XI students on buffer solution material.

Keywords: Discovery Learning Model, Scientific Approach, Representational Ability

The Influence of the Project-Based Learning Model with a Local Wisdom Approach on the Science Process Skills of Class XI Science Students at Senior High School Negeri 1 Kolaka

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Abstract

Background and Aims: This study was intended to find out: To find out whether there was a significant difference between the pretest results of students in the experimental class and the control class on sound wave material at SMA Negeri 1 Kolaka, To find out whether the post-test results of students in the experimental class were better than those in the class control on sound wave material at SMA Negeri 1 Kolaka and To find out whether there is a significant influence of the project-based learning model with a local wisdom approach on the science process skills of class XI students of SMA Negeri 1 Kolaka. **Methods:** The type of research used in this research is experimental research with a true experimental research design with a quantitative method. The population in this study were all students of class XI IPA SMA Negeri 1 Kolaka for the 2022/2023 academic year. Sampling was carried out using the Random Sampling technique with a large number of research samples, namely 34 students from the experimental class and 30 students from the control class. The data collection technique in this study was a science process skills test and documentation. Data analysis techniques using descriptive analysis and inferential analysis and hypothesis testing. in the descriptive analysis it was explained that the mean and standard deviation of the sample were then used in inferential analysis to obtain normally distributed samples from homogeneous populations and to test the hypothesis using the t-test. **Results:**

pretest of the control-class experiment obtained $7.225 > 0.05$ meaning that there was no effect significant difference between the pretest results of students in the experimental class and the control class in the material of sound waves in Kolaka 1 Public High School, the t-test posttest of the control-experiment class was obtained $-21.66 <$ meaning that there was a significant influence between the results of the students in the experimental class and the control class in the pretest sound wave material at SMA Negeri 1 Kolaka and the one-way anava test obtained the results $F_{count} = 178.863$ and $F_{table} = 2.70$ **Conclusion:** it can be concluded that if $F_{count} \geq F_{table}$ then there is a significant influence of project-based learning models with local wisdom approaches to process skills science class XI IPA students at SMAN 1 Kolaka.

Keywords: Local wisdom approach, Project Based Learning Model, Science Process Skills

The Potential and Strategies of Southeast Sulawesi Local Literature as Medium of Identity and Character Development

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Abstract

Background and Aims: The issue of identity crisis and the young generation with good character are widely discussed because they are considered as obstacles and challenges in realizing the golden generation by 2045. Local literature as a cultural product contains the values and social norms of particular group. It can influence readers. Therefore, with the right strategy, it can be a solution to build character and identity. Thus, this article talks about what is the potential and strategy of using Southeast Sulawesi's local literature to become a medium of young generation's character and identity development. The aim of this article is to explain the potential and strategy of using the literature of Southeast Sulawesi as a medium to develop young generation's character and identity.

Methods: the method used is descriptive qualitative method. It is a kind of literature study. The object of this research is the collection of Southeast Sulawesi fairy tales and any journal and literature about southeast Sulawesi literature. The data was collected by reading, note taking, and data classifying. While technique of data analysis are by describing and interpreting the data qualitatively.

Results: Southeast Sulawesi literature contains social, individual, and religious value. Therefore, local literature should be included in extracurricular involving regional writers. In society, it should be made a part of people's daily life by making the slogans and poster of local rhymes in public places, enlivening it presence on social media, and present it in the more modern way and

technology. **Conclusion:** local literature is a local wisdom that has potential to be a medium to realize the golden generation by 2045 if it is used with the right strategies.

Keywords: Southeast Sulawesi literature, character development, identity

The Relationship Between Academic Stress And The Intensity of Smoking Behaviour In Students Preparing Their Thesis

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Abstract

Background and Aims: Intensity of Smoking Behavior is a condition of the level or amount of a person's activity in burning and inhaling tobacco, which can result in smoking that can be inhaled by the people around them. Cigarette smoke can also affect the cardiovascular system, increasing the risk of heart disease, as well as affecting the nervous system, immune system and hormonal system. Cigarette smoke can have various negative impacts on people who inhale it, especially if they are passive smokers or do not smoke actively. This study aims to determine the relationship between academic stress and the intensity of smoking behavior among students who are preparing their thesis.

Methods: This is an quantitative study using primary data and secondary data sources. The method used in this research was total sampling, which consisted of 73 individuals. The population in this study was 73, and the sample measurement instruments used in this study were A 23-item academic stress scale and 27-item smoking behavior intensity scale. The techniques for data collection were literature study, observation, interviews, and documentation. The techniques for data collection were literature study, observation, interviews, and documentation. All data that have been collected was analyzed by reducing, presenting, and concluding techniques.

Result: Based on the results of the product moment correlation test, the significance value of the two variables is less than 0.005, which means 0.000. Meanwhile, the results of the Pearson correlation test show that both variables have a value of

0.113. **Conclusions:** From the test results, it can be concluded that the academic stress variable (X) and the intensity of smoking behavior variable (Y) have a positive relationship, meaning that the higher the academic stress experienced by students can trigger smoking behavior in students.

Keywords: Students, Smoking Behavior, Academic Stress

The Relationship Between Teacher Skills in Classroom Management With Physics Learning Achievement

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Abstract

Background and Aims: This study aims to describe the relationship between teacher performance in classroom management with physics learning achievement in class XI of SMA al-fiqri telaga. **Methods:** The population used in this study was all grade XI students of Al-Fiqri Telaga High School consisting of two classes with the number of students in each class amounting to 25 students. Samples are taken randomly or Random Sampling. The approach used is quantitative with correlation methods, To collect data used questionnaire techniques, documentation and observation. Questionnaires are given to students who are used as respondents and documentation techniques are used to obtain student achievement scores. **Results:** The learning achievement of Al Fiqri Telaga High School students is very good in physics subjects as evidenced by the variation in student learning achievement between the highest score of 96 and the lowest of 70. Resulting in an average learning achievement of XI students of 77.64 from a total of 25 students, and there is a positive and significant correlation between Class Management and Physics Learning Achievement of grade XI students of 3sSMA Al Fiqri Telaga. The management of the class can affect student learning prestasi 57.76%, while 42.24% is influenced by other factors. **Conclusion:** From the results of the research conducted, conclusions can be drawn about the management of the teacher's class, most students think that the physics teacher of Al- Fiqri Telaga High School is in the very good category. **Keywords:** class management, learning achievement

The Role of Civics Teachers in Developing Students' Moral Values and Norms in Schools

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Abstract

Background and Aims: This research is motivated by the degradation of morals and norms or the erosion of morals and norms that occurs in elementary school students which causes students to lose their identity, and alienate themselves and their environment, such as fighting with teachers, not respecting their peers, not respecting elders, sitting at the table, and selfish. The purpose of this study was to find out the causes of the decline in students' moral values and norms, to find out the teacher's role in developing moral values and norms for elementary school students, and to find out how important it is to develop values and morals in elementary school students. **Methods:** This type of research is qualitative research based on theory with a descriptive approach. Data was obtained from observations and interviews. Data collection techniques used are observation, interviews, and documentation. The instruments used are observation guidelines, interview guidelines, and documentation guidelines. The research was conducted at SD Negeri 19, Lameo-meong District. West Poleang, District. Bombana, Southeast Sulawesi Province with 3 respondents consisting of the school principal, guidance counselor, and homeroom teacher. **Results:** The results of the study concluded that the cause of the decline in students' moral values and norms in elementary school was cell phones which lacked parental supervision. The role of the teacher in developing students' values and moral norms is that a teacher must be able to be an example that students can emulate. in behavior and

personality. **Conclusion:** being a good role model in behavior, accustoming students to positive things, and the importance of developing moral values and norms for students is very important. carried out at the elementary school level, especially at SD Negeri 19 Lameo-meong because it is to shape the behavior, personality, and identity of students.

Keywords: developing moral values and norms, the role of the teacher

The Role of Intellectual Capital and Self-Efficacy in Mediating The Influence of Ethical Leadership on Innovation Performance: a Case Study among Civil Servants in Kendari City

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Abstract

Background and Aims: Today's innovative performance is no longer considered an inherent quality, which is only possessed by a few employees but must be reflected as a competency for all employees so it needs to be improved through adequate training and experience. Therefore, it is necessary to have leaders who apply an ethical leadership style to create a work environment that is able to improve the attitudes and behavior of their subordinates. Ethical leaders encourage employees to channel their fitness into work so that the influence of ethical leadership on employee intellectual capital, ethical leadership on self-efficacy can run well.

Methods: This is an quantitative study using primary data and secondary data sources: There are three type informant in research This that is informant key, informant expert (main), and informant incidental (supporting). The techniques for data collection were literature study, observation, interviews, and documentation. The techniques for data collection were literature study, observation, interviews, and documentation. All data that have been collected was analyzed by reducing, presenting, and concluding techniques. **Result:** The role of intellectual capital in mediating greatly influences ethical leadership on innovation performance. Apart from that, the role of self-efficacy in mediating ethical leadership also greatly influences employee innovation performance. **Conclusions:** Ethical leadership can help increase employees' intellectual capital by creating a work environment that

supports growth, learning, and collaboration. This, in turn, can contribute positively to an organization's long-term performance and success.

Keywords: the role of intellectual capital, Self-Efficacy, Ethical Leadership

The Use of Google Classroom in Learning Writing: A Study of EFL Students' Attitude

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Abstract

Background and Aims: The purpose of this study is to investigate the attitudes of English as a Foreign Language (EFL) students concerning the use of Google Classroom. With the increasing integration of technology in education, it is essential to assess how EFL students perceive and engage with digital tools like Google Classroom in the context of writing instruction. **Methods:** This study employed a case study method, which is well-suited for gaining an in-depth understanding of a specific phenomenon within its real-world context. In this case, the phenomenon is the attitudes of the selected EFL students towards the use of Google Classroom for writing. The participants in this study were four students from class IX2 of SMPN 14 Kendari. The selection of participants was based on purposive sampling, where individuals meeting specific criteria set by the researcher were chosen to participate. Then, the data for this study were collected through interviews. Specifically, semi-structured interviews were conducted with the chosen participants. **Results:** There were five student affective attitudes regarding writing in Google Classroom, including usefulness: students can write sentences in English in Google Classroom. Then, students find it simple to complete writing tasks in English in Google Classroom; accessibility: students believe the learning process in Google Classroom is easily accessible. Engagement: students are actively involved in the writing process when they use Google Classroom because it has interactive features and tools that enhance their learning experience. Collaboration: Google Classroom enables students to

work together on writing tasks and offer comments to one another in real time. **Conclusion:** this study underscores the varied attitudes of EFL students towards Google Classroom in the context of writing. While the platform offers several benefits, including ease of use, accessibility, and opportunities for engagement and collaboration, it is not without challenges. Technical issues and individual preferences play a significant role in shaping students' perceptions.

Keywords: Academic Writing, Attitude, Google Classroom

Time Token Model and Wordwall Interactive Game in Learning: Effectiveness on Communication and Collaboration Skills

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Abstract

Background and Aims: Formation of expertise through a variety of courses in tertiary institutions should not only instill aspects of hard skills but also soft skill. In fact, learning practices within the scope of the Biology Education Study Program at the Universitas Sembilanbelas November Kolaka, which is specifically designed to hone students' communication and collaboration skills, are considered not optimal. It requires the involvement of innovative learning models and media that promote learning experiences through communication and collaboration activities. This study aims to determine the effectiveness of using the time token learning model combined with wordwall-based interactive games on student communication and collaboration skills. **Methods:** This research is a quantitative pre- experimental study with a one-group treatment design. Of the 144 population, 24 people were obtained as samples through non-probability sampling technique of purposive sampling type. Research data was collected through observation techniques. The research instrument is an observation sheet of communication skills with 6 aspects of assessment and an observation sheet of collaboration skills with 4 aspects of assessment. Data were analyzed descriptively and inferentially (paired sample t-test, sig. 5%) followed by the N-Gain test. **Results:** The results showed that the average value of communication skills before treatment was 45.31 and during treatment was 78.53. The average value of collaboration skills before treatment was 42.19 and during treatment was 86.64. The results of the paired sample t-

test all showed the sig. $0.000 < 0.05$. The results of the N-Gain test on communication skills were 61.93% (effective enough category) and collaboration skills were 78.75% (effective category).

Conclusion: It can be concluded that the use of the time token learning model combined with wordwall-based interactive games effectively improves students' communication and collaboration skills.

Keywords: communication, collaboration, time token model, wordwall game

Use of Android-Based Electronic Magazines to Improve Student Learning Outcomes

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Abstract

Background and Aims: Learning resources are all kinds of media, objects, data, facts, ideas, and people that can beautify the learning process for students. The purpose of using this electronic magazine emphasizes improving student learning outcomes, the phenomenon in MTs Nurul Ikhlas Ambon shows that student learning outcomes during the physics test process are still lacking, so it is necessary to use the latest learning resources to improve student learning outcomes. One alternative is the use of Android-based electronic magazines. The problem in this study is how to use electronic magazines as a learning resource to improve student learning outcomes. **Methods:** This study used a quantitative type of research. **Results:** The subjects of the study were 17 students in 2023. The variables studied are the results of student responses to electronic magazine learning resources and student learning outcomes on the subject of the solar system. Data were taken with initial tests, questionnaires and final tests. **Conclusion:** The conclusion of this study is "there is an increase experienced by students in learning using Android-based electronic magazines on the learning outcomes of MTs Nurul Ikhlas Ambon students".

Keywords: Electronic Magazine, Learning Outcomes

Section Green Energy on Mining and Marine Science

Amino Acid Content of Balinese Cattle After Growth Promoter Injection and Supplemental Feeding

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Abstract

Background and Aims: The phenomenon of using supplemental feed in combination with growth promoters is a problem for farmers as the government has banned the use of growth promoters. Therefore, research is needed to determine its effect on the amino acid content of Balinese beef. **Methods:** The Study Experimental research was conducted using a completely randomized design (CRD) factorial pattern. Factorial pattern, using 24 male Balinese cattle aged 18 months and divided into 4 treatments, namely G0P0/control. treatments, namely G0P0/control not injected with growth promoter and no supplementary feed. G0P1 not injected with growth promoter but given supplemental feed. G1P0 injected with growth promoter without supplemental feed and G1P1 injected with growth promoter and supplemental feed. The study was conducted for six months and meat samples were taken at the end of the study. Amino acid levels were measured by HPLC (High Performance Liquid Chromatography) method. **Results:** The results showed that the injection of growth promoters and feed additives increased the levels of essential and non-essential amino acids. **Conclusion:** the combined feeding could not increase the levels of non-essential amino acids.

Keywords: Growth Promoters, Feed Supplement, Balinese Cattle, HPLC

Analysis of Mine Slope Stability Using Numerical Slide Model and Equivalent Boundary Equations Using Drill Hole Data in East Deuter Block At PT. FSP, East Kalimantan Province

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Abstract

Background and Aims: Safe and stable mine slopes ensure smooth mining operations. This research was conducted in the laboratory using assays from geotechnical drilling results on the East Deuter Block at PT.FSP. The purpose of this study is to determine the optimal slope geometry values for Single Slope, High Wall and Low Wall while the analysis method uses the Limit Equilibrium Method, in this case the Bishop Method, and the Janbu Method with the help of Slide V.6.20. **Methods:** To determine the value of the safety factor, software and manual analyzes are performed with input data, namely rock properties from laboratory tests. **Results:** The geometry simulation results obtained on a single slope, namely 5 meters high and 70 angle, on High Wall slope, FK values > 1.3 were not found in a safe geometry, therefore the slope was modified by creating a Intermediate berm modified. namely 115 meters high and 28 angles and dividing the slope load into 4 parts with an intermediate berm width of 30 meters to get a safe slope safety factor value, thus on the low wall slope based on the modified slope the safety factor on the slope becomes safe. **Conclusion:** modified embankments are required to overcome the problem of high-wall slopes not being in a safe condition despite repeated simulations, and modified embankments offer optimization in terms of safety and economics. **Keywords:** Safety Factor, Geotechnical, Slope Stability and Limit Equilibrium Method

Analysis of Visceral Extract Tropical Abalone (*Haliotis asinina*) on The Regeneration of Caudal Fin Wound Tilapia (*Oreochromis* sp)

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Abstract

Background and Aims: Tropical abalone *Haliotis asinina* is a marine biota type of mollusk from the gastropod class which is found mostly in eastern Indonesian waters, better known as the seven-eyed clam. The high anti-oxidant and anti-inflammatory content in abalone is believed to be able to heal wounds. This study aims to analyze the effectiveness of tropical abalone (*Haliotis asinina*) visceral extract in accelerating the regeneration of tilapia (*Oreochromis*) tail fin wounds. **Methods:** This research was conducted in July 2023 at the Institute for the Study and Application of Fisheries and Marine Resources Technology, Konawe, Southeast Sulawesi. The instruments used were 30 sets of small aquariums, analytical scales, bistury/surgical blades, digital stigmatic sketchpads, digital microscopes. The test animal used was Tilapia (*Oreochromis*) from cultivation at the Abeli Sawah Kendari Freshwater Fish Seed Center, Kendari, Southeast Sulawesi and the intervention used was *Haliotis asinina* Tropical Abalone taken from Tapulaga waters, Konawe, Southeast Sulawesi. The design of research is an experimental pre-post-test only control group design with data analysis using a non-parametric test, namely the Kruskal Wallis Test. **Results:** The results showed that statistically the level of significance in the treatment group given the visceral extract of tropical abalone *H. asinina* was higher than the control group with a significance value ($U= 0.000$ $p=0.000$). This study showed that Visceral extract of tropical abalone *H. asinina* proved to be the most effective in accelerating the histological regeneration of tail fin wounds in Tilapia (*Oreochromis*) fish compared to the control

group. **Conclusion:** the visceral extract found in *Haliotis asinina* abalone has been proven to be able to accelerate the regeneration process in the caudal fin of *Tilapia (oreochromis sp)*, this can be caused by the high content of anti-oxidants found in the visceral of *haliotis asinina* abalone which can repair damage to body cells.

Keywords: Regeneretion, Tilapia Fin, Viscera Abalone

Analysis of Water Quality in Terms of Poso Urban Space Utilization

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Abstract

Background and Aims: Seawater quality is a critical aspect in understanding the sustainability of the maritime environment, and the aspect of proper utilization of Poso's urban space towards the Poso river that flows into the sea has great significance in maintaining the balance of aquatic ecosystems and coastal environments. This condition encourages the assessment of seawater quality and identification of spatial utilization in Poso urban and surrounding areas, from sampling at the mouth of the largest river in Poso urban and samples in mangrove coastal waters which are considered as ecosystem sources. This study aims to conduct an in-depth analysis of seawater quality by combining physical, chemical and biological parameters. **Methods:** Using an exploratory descriptive method with a qualitative and quantitative approach, with 4 (four) key parameters, the research resulted in a Marine Water Quality Index with a "medium" value category. **Results:** the identification results produced spatial utilization with residential land use and rice fields that have the closest interaction with the Poso river.

Keywords: Water Quality, Space Utilization, Parameters

Application of Aquaponics Technology to the Survival of Tilapia (*Oreochromis niloticus*) with Different Densities

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Abstract

Background and Aims: Increasing the density of fish populations in ponds is one of the efforts made to increase production, however, this can have a negative impact on water quality and interfere with catfish farming. Therefore, an approach that involves the use of aquaponics technology is needed. Aquaponic fish farming is a cultivation system that saves land use and increases the efficiency of nutrient utilization from leftover feed and fish metabolism, so as to increase the growth and survival of cultivated fish. This study aims to determine how the effect of different densities on the survival and growth of tilapia (*Oreochromis niloticus*) in an aquaponic system. **Methods:** This research was conducted in February-March, at BBI Wundulako, Kolaka District, Southeast Sulawesi Province. Test animals were examined and acclimatized before being placed in research containers. Feeding is given at 07.00 in the morning and 05.00 in the afternoon, with a dose of 5% of the weight of fish biomass. The design used in this study was a completely randomized design (CRD), with three treatments and three replications, namely treatment A (stocking density of 10 individuals/10 liters), B (15 individuals/10 liters). and C (20 individuals/10 liters). Parameters measured included survival, absolute weight growth, specific growth, feed conversion ratio and water quality. **Results:** The results of this study showed a significant effect on survival, absolute weight gain, specific growth and feed conversion ratio. Based on the test (BNT), the best results

were obtained in treatment A both in survival, absolute weight growth, specific growth, and feed conversion. the results of water quality measurements during the study were still in the good range for tilapia cultivation. **Conclusion:** The conclusion from this research is that the best stocking density for tilapia (*Oreochromis niloticus*) aquaponics system is the stocking density of 10 fish/10 liters.

Keywords: Aquaponic, survival, Tilapia (*Oreochromis niloticus*), Different Density

Automated Classification of Fish Freshness Based on Eye Area Color Analysis Using Digital Image Processing and Naive Bayes Classifier

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Abstract

Background and Aims: The abundance of fish as a primary food source in Indonesia underscores the critical need to ensure the freshness of fish within the food supply chain. However, the practice of mixing fresh fish with non-fresh fish poses a significant threat to consumer health and compromises overall fish production quality. Skipjack tuna is one of the marine product commodities that dominates the fisheries export sector in Southeast Sulawesi. Hence, an automated and efficient method is essential to distinguish between fresh and non-fresh fish. This study aims to develop an automated system that enables to classify the freshness of skipjack tuna fish based on color analysis in the fish eye area. **Methods:** A total of 40 eye image of skipjack tuna were acquired and utilized in this research. Firstly, fish images were digitally processed and segmented based on the RGB and YCbCr color models to obtain binary images representing the fish eye area. Subsequently, entropy values were computed for the binary segmented images as a representation of color diversity. Naive Bayes Classifier was employed for the classification process.

Results: The test results demonstrated that the proposed classification method achieved an accuracy rate of 97.5%. This outcome signifies the significant potential of the color analysis method in the fish eye area as an indicator of fish freshness.

Conclusion: The results of this research can serve as a foundation for the development of a broader system to swiftly and accurately identify fish freshness, especially for skipjack tuna species, by implementing digital image processing technology. This can contribute significantly to the fisheries industry by enhancing quality control supervision and ensuring the availability of safe and high-quality fish products in the market.

Keywords: color analysis, fish, Naive Bayes, RGB

Characteristics and Side Friction Class Analysis on D.I. Panjaitan Road in Kendari City

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Abstract

Background and Aims: Traffic congestion occurs due to the imbalance between the growth of vehicles with improved infrastructure, rapid urbanization, low of discipline of road users, and side friction. Land use, type of road, and size of city result in the characteristics and level of side friction. From these things, research on the analysis of characteristics and level of side friction on the D.I. Panjaitan Road section in Kendari City became interesting. The purpose of this study was to identify the characteristics of side friction and determine the level of side friction. **Methods:** This research is quantitative research, referring to the 2014 Indonesian Road Capacity Guidelines or abbreviated as PKJI 2014. The research was conducted for two months from April to May 2020 at the location of Jalan D.I. Panjaitan, Kendari City. **Results:** From research and analysis, it was found that side friction that occurs at three observation points was generally caused by the type of activity of stopped vehicles, parking on street, and vehicles coming into and exiting the parking area and coming into or leaving the neighbourhood. Based on side friction frequency data at three observation points showed the lowest Side Friction Frequency (SFF) of 33.5 and 39.4 events at point T3, then 67.6 and 64.4 at point T2, and the highest at point T3 70.5 and 59.9 events. **Conclusion:** From the results and discussion shows that the side friction class on the road was categorized is very low. The low side friction at the observation location was caused by the observation time carried out during the decline in community activities due to

the implementation of health protocols due to the increase in Covid-19 cases.

Keywords: Side Friction, Side Friction Characteristics, Side Friction Class

Comparative Study Quality of KUB Chicken Spermatozoa Collected using Fishing Hen and Massage Method

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Abstract

Background and Aims: Comparative study of the quality of KUB chicken sperm collected using the fishing hen and massage methods aims to determine the difference in the quality of semen collected using the fishing hen method and the massage method. The material used in this research was KUB roosters and hen aged 1 year. **Methods:** Fresh semen that has been collected using the fishing hen method and massage method is subjected to macroscopic and microscopic quality tests. The parameters observed in this research are; volume, color, odor, pH, consistency, mass movement, motility, viability, abnormalities and integrity of the plasma membrane. Data analysis used the T test. **Results:** semen observations used the massage, namely; semen volume 0.48 ± 0.14 ml/ejaculate, milky white color, characteristic odor, thick consistency, pH 7.33 ± 0.24 , concentration 3×10^9 / ml, good mass movement, motility $92 \pm 2.58\%$, viability, $96.35 \pm 2.02\%$, abnormality $3.43 \pm 0.83\%$, and plasma membrane integrity $97.58 \pm 1.04\%$. The results of semen observations using the fishing hen method are; semen volume 0.63 ± 0.18 ml/ejaculate, milky white color, typical odor, medium and thick consistency, pH 7.35 ± 0.26 , concentration 2.9×10^9 / ml, good mass movement, motility $92 \pm$

3.49%, viability, $96.90 \pm 1.17\%$, abnormality $3.23 \pm 0.83\%$, and plasma membrane integrity $97.18 \pm 1.56\%$. **Conclusion:** rooster spermatozoa collected using fishing hens have more volume/ejaculate than using the massage method. The concentration and consistency of chicken spermatozoa produced using the massage method is higher than using the fishing hen method. Motility, viability, abnormalities and plasma membrane integrity of chicken spermatozoa did not show any differences in the results of the two semen collection methods

Keywords: KUB Chicken, Spermatozoa, Fishing Hen, Massage

Conservation of Natural Resources in Nickel Mining

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Abstract

Background and Aims: The nickel mining industry, while providing substantial economic benefits, often generates adverse impacts on the natural environment. The aim of this abstract is to evaluate conservation approaches that can be applied in the context of nickel mining to mitigate environmental impacts.

Methods: This research involves intensive field surveys in significant nickel mining regions. It includes monitoring changes in water quality, flora and fauna, and the utilization of state-of-the-art modeling technology to understand the dynamics of affected ecosystems. Additionally, a review of stringent regulations and sustainable management practices applied within this industry was conducted. **Results:** The results of the research demonstrate that the use of advanced monitoring technology has enabled a better understanding of the impacts of nickel mining on ecosystems. It was found that strict regulations and sustainable waste management practices are effective in reducing environmental impacts. Furthermore, collaboration among stakeholders, including mining companies, government entities, and local communities, has successfully mitigated negative impacts on natural resources. **Conclusion:** To strike a balance between economic interests and environmental protection, it is essential to adopt a science-based and technology-driven approach within the nickel mining industry. Thus, the conservation of natural resources in nickel mining can become a reality, supporting the sustainability of the industry and the preservation of natural ecosystems.

Keywords: Conservation, Monitoring Technology, Natural Resources, Nickel Mining, Stakeholder Collaboration, Sustainable Management

Current Status of Mangrove Ecosystem of Kolaka and Their Ecological Role to Reduce the Global Climate Change Impact and Protecting Coastal Resources

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Abstract

Background and Aims: Mangrove ecosystems along the Kolaka coastal line have been degraded due to land use change. This is very concerning due to the role of this ecosystem in mitigating the global climate change. This study aimed to analyze the mangrove condition, estimate the aboveground biomass, carbon stock, and its potential to absorb atmospheric CO₂ emissions. Besides that, this study aims to analyze the biodiversity of mollusks. **Methods:** This study was conducted on August 2020 in the mangrove ecosystems of Induha, Mangolo, Wundulako, and Baula. Mangrove condition data were collected using the quadratic transect method. The aboveground biomass data using DBH and allometric model. Carbon stock was analyzed by the biomass data and the constant of C organic content. Meanwhile, CO₂ absorption data was obtained by using the carbon stock data, Mr. CO₂, and Ar C. Mollusks data was done by the quadratic transect method. **Results:**

Mangrove ecosystems along Kolaka Regency coastal line consisted of 8 species. The total density of mangroves was Induha (3466,66 ind/ha), Mangolo (3066,66 ind/ha), wundulako (2180 ind/ha), and Baula (2160 ind/ha). Mangrove aboveground biomass in each location was Induha (226,76 Mg ha⁻¹), Mangolo (202,17 Mg ha⁻¹), Wundulako (397,35 Mg ha⁻¹), and Baula (455,58 Mg ha⁻¹). Carbon stock in each location was Induha (95,02 Mg C ha⁻¹), Mangolo (90,74 Mg C ha⁻¹), Wundulako (186,75 Mg C ha⁻¹), and Baula (214,11 Mg C ha⁻¹). Meanwhile, the capacity of CO₂ absorption by mangroves in each location was Induha (221,71 Mg CO₂ ha⁻¹), Mangolo (211,77 Mg CO₂ ha⁻¹), Wundulako (435,75 Mg CO₂ ha⁻¹), and Baula (499,65 Mg CO₂ ha⁻¹). The biodiversity of mollusks in both two locations consisted of 15 species. **Conclusion:** This remaining mangrove ecosystem has considerable potential to absorb atmospheric CO₂ emissions and store that into their biomass. Therefore, management effort is needed to ensure sustainability.

Keywords: Carbon stock, Climate change, Mangroves

Development Strategy of Organic Rice as an Effort to Strengthening Sustainable Agriculture in Kolaka Regency

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Abstract

Background and Aims: Organic farming is the answer to the impact of the green revolution being promoted at this time. Organic farming encourages producers and consumers of organic rice to increase productivity and food security. This relates to low input technology, environmental preservation, input/output efficiency, price accessibility and supports the Sustainable Development Goals (SDGs) to increase food security, sustainable consumption and production. The urgency of research was carried out to provide solutions to organic rice farmers in the form of recommendations related to steps and strategies for developing organic rice in Kolaka Regency. Research objectives to provide recommendations for organic rice development strategies. **Methods:** The analytical method includes a qualitative descriptive analysis arranged in the form of an IFE and EFE Matrix, SWOT and QSPM. **Results:** The results of the study are that there are five development strategies including printing new rice fields and increasing organic rice production, packaging training, digital marketing and financial management, establishing partnerships with supporting stakeholders for organic farming, procuring Gasrok machines, chopping machines and repairing irrigation canals, improving quality and organic rice brand. **Conclusion:** The sequence of priority strategies includes Priority Strategy I (Creating new rice fields and increasing organic rice production), Priority Strategy II (Packaging training, digital marketing and

financial management), Priority Strategy III (Establishing partnerships with stakeholders supporting organic farming).

Keywords: Development Strategy, Organic rice, Sustainable Agriculture

Environmental Analysis to Support Sustainable Ecotourism in Pulisan Bay

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Abstract

Background and Aims: Pulisan Bay, located on the most Northern shore of Sulawesi, has much to offer discerning travellers, tourists and residents. Beautiful beaches that open up between thick forest and rocky hills formations are only one of them. Hikeable hills with densely trees yet open areas of savannas are collective assets of this place. Upon closer inspection several areas are still raw and virgin with minimum or no access at all from the land or sea that became the refuge of faunas such as species of Yaki (Celebes crested macaque). Beyond the land confined by roads, unpaved pathways, single tracks or unopened trails, one can find more than just the beaches and explore the hidden gem underneath the transparent turquoise sea. Coral reefs, rock formations and a school of colourful fish can be seen in the unexpected places and are waiting to be explored underwater with scuba or snorkel. Boat riding is another way to experience the unreachable places on the other side of the Bay. With these potentials, the Ministry of Tourism, Public Works Department of Indonesia and with the owner of the land has initiated the designation of Pulisan Bay as a Special Economic Zone (SEZ) with emphasis on Eco Tourism. Sustainable tourism is defined as “tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities”. That is why, It is imperative to have a guideline for the planning development in Pulisan Bay to achieve the fundamentals of sustainable tourism, as well as in maintaining the area’s pristine environment by preserving local

natural features such as clear water beach, undulating hill. Using the environmental system analysis, the relationship between the system and the environments in Pulisan Bay will be examined based on productivity, stability, sustainability and equity to generate the ecosystem concept in environmental management. This writing is intended to provide criteria designated for tourism destinations and suggest various purposes to guide users through the process of conceiving, planning and creating development that is sustainable.

Keywords: development guidelines, ecotourism, environmental analysis, sustainable tourism

Environmental Sustainability and Ions Removal through Electrodialysis combined Reverse Osmosis Desalination: Aspects of Coastal Communities and Technological Advances

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Abstract

Background and Aims: Freshwater scarcity has become a serious problem for coastal communities, mainly caused by climate change, rapid population growth, and over-exploitation of groundwater and surface water resources. It is important to find a solution to support the availability of freshwater by utilizing desalination technology (electrodialysis (ED) and reverse osmosis (RO)), and the social relationship of the community towards the feasibility of desalination technology to improve overall sanitation conditions in the community. **Methods:** To address these challenges, this study adopted a semi-structured review methodology, with reference to relevant literature and studies, to evaluate the potential positive and negative impacts associated with the adoption of desalination technology. **Results:** Significant progress has been made in desalination technology, particularly through integrating ED and RO methods. The combined use of ED and RO methods offers dual functionality. These methods have

proven highly efficient and environmentally friendly, enabling seawater conversion into freshwater. Electrodialysis effectively reduces the salt content in seawater by capturing Na⁺ and Cl⁻ ions, while RO membranes play an important role in removing residual ions and nanosized particles. Findings from the review of related articles showed that most respondents (66.7%) expressed concerns about future water scarcity issues. In addition, a minority (3.4%) actively supported the implementation of desalination technology. In comparison, the majority (75.1%) emphasized the importance of considering the location and timing of public hearings to accommodate residents' preferences in establishing desalination facilities. Developing desalination technology and social approaches to community acceptance are important to improve sanitation and overall community welfare. **Conclusion:** These insights highlight opportunities to provide access to clean water, thereby significantly improving health and technological prospects for coastal communities. By utilizing advances in desalination technology, coastal communities have the potential to reduce the impact of freshwater scarcity and offer a sustainable solution to the clean water crisis.

Keywords: Coastal Communities, Desalination, Social, Sustainability, Technology

Evaluation of The Performance Ulu Wolo Irrigation Network System

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Abstract

Background and Aims: this research aims to determine the performance existing of the Ulu Wolo network system, which is located in Wolo District, North Kolaka Regency. **Methods:** this research was carried out by field observations the condition and general assessment operational performance of the irrigation network for each assessment indicator. The research variables used are based on 6 O & M system performance indicators that integrate various conditions in the irrigation network service system. The population in this study is the total area of the Ulu Wolo irrigation area, the research sample is the left intake of the Ulu Wolo irrigation area with an area of 106,841 m². In this research, data collection techniques used irrigation system performance assessment forms in accordance with Minister of PUPR Regulation Number 12/PRT/M/2015, field observations, and photo documentation. **Results:** the condition of physical infrastructure is 17.54 (a network that is not working optimally), this condition is caused by the presence of tertiary channels that are not functioning well. The condition of planting productivity which has not reached optimal performance is 11.10, the cause is that many tertiary channels contain sediment buildup. The O and P conditions are 14.70 (not yet optimal), due to the fact that there are still piles of rubbish in the channel. Likewise, documentation was 1.49 (not yet optimal), this was due to the absence of maps, pictures, irrigation network documents, photos and notebooks of tertiary channel conditions for network officers. P3A was 13.10 (quite good),

because farmers were quite active in participating in extension activities. **Conclusion:** The performance level of the Ulu Wolo irrigation network is based on the results of the tertiary irrigation network performance index calculation of 68.21, including the poor performance category.

Keywords: evaluation, performance, irrigation.

Flood Control Study of Waturai River, Waturai Village, Southeast Wawonii Sub-District Konawe Islands Regency

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Abstract

Background and Aims: The upper course of the Waturai River is located in the Konawe Islands Regency and empties into the Southeast sea of Wawonii Island, stretching from North, West, and East to Southeast of Wawonii Island. The largest annual flood occurred in December 2013 resulting in damaged public facilities, gardens, rice fields, and residential areas around the mouth of the Waturai River. The water flow of the Waturai River causes damage to the river cliffs and its surroundings. This is very disruptive to community activities, so it is necessary to deal with these problems. This is done by comprehensively researching "Flood Control and Restoration of the Waturai River". **Methods:** Data analysis based on theory, calculations using: Standard Deviation; Skewness Calculation; Kurtosis Calculation; Coefficient of Variation; Log Pearson Type III; Fit Test. To determine the capacity of the river cross-section, to describe the existing and planned conditions. The analysis used the Hydrologic Engineering Centre's - River Analysis System 4.1.0 program to create a one-dimensional flow simulation. Analysis of the Waturai River kilometre 0 - 38, then obtained the results of the calculation using daily rainfall data on the Waturai River flow of 4017.85 millimetres per year. Furthermore, the rainfall. Produces a 10-year return period flood discharge, unable to flow in the Waturai River. **Results:** Calculation of four alternatives, it can be concluded that the fourth

alternative can provide a solution to the problem. By making a 5-meter-high embankment against the existing riverbank elevation. The existing Waturai River has 364 flood points to be free with this alternative. **Conclusion:** The conclusion is that the Waturai River basin needs normalization, namely the addition of embankments as high as 4 - 5 meters, so that the water discharge of the Waturai River can be resolved.

Keywords: Flood and Restoration, Waturai River, Southeast Wawonii Island, Konawe Islands Regency

Glucose Supplementation in Egg Yolk Lactate Ringer Diluent on Spermatozoa Quality of KUB Chicken at 5oC Storage

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Abstract

Background and Aims: Research with glucose supplementation on egg yolk ringer lactate basic diluent is expected to be able to maintain the quality of spermatozoa of KUB chickens up to 120 hours of storage at 5oC. Material uses chickens, namely semen from KUB chicken. **Methods:** collection and evaluation of semen, preparation of diluent, dilution of semen, storage of semen, and observation of liquid semen. The parameters of this study are; motility, viability, abnormalities, and plasma membrane integrity. The research using data analysis a completely randomized design, 4 treatments (control, 10 mM glucose addition, 30 mM glucose, and 50 mM glucose), observations were repeated 10 times. **Results:** motility mean 0 hours $91.62 \pm 3.29\%$, 24 hours $62.50 \pm 7.84\%$, 48 hours $41.75 \pm 10.10\%$, 72 hours $32.13 \pm 10.80\%$, 96 hours $25.50 \pm 13.24\%$, and 120 hours $15.75 \pm 12.17\%$. Spermatozoa viability at 0 hour observation was $95.96 \pm 1.48\%$, 72 hours $47.60 \pm 13.97\%$, and 120 hours $22.54 \pm 15.77\%$. Spermatozoa abnormalities at 0 hours of observation were $3.38 \pm 1.11\%$ and 72 hours $16.78 \pm 2.68\%$. The integrity of the spermatozoa plasma membrane of KUB chickens at 0 hours of observation was $96.59 \pm 2.38\%$, 72 hours $80.40 \pm 6.03\%$, and 120 hours $46.45 \pm 31.36\%$. **Conclusion:** This study was that

supplementation of 50 mM glucose into basic diluent ringer lactate in egg yolk was able to maintain motility, viability, plasma membrane integrity and minimize spermatozoa abnormalities in KUB chickens up to 120 hours of storage at 5°C. KUB chicken spermatozoa can survive storage for 120 hours using liquid semen (5°C).

Keywords: Glucose, KUB Chicken, Liquid Semen, Spermatozoa

Integrated Conservation Management of Sahiwal Cross Cattle as a Dual Purpose Animal Food Source Through the Application of Artificial Insemination Technology in Southeast Sulawesi

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Abstract

Background and Aims: This research aims to (1) Identify the characteristics and environment of the Sahiwal Cross Cattle Farming Business as a food source for producing meat and milk (Dual purpose) in Southeast Sulawesi Province (2). Designing Integrated Conservation Management for Sahiwal cross cattle which are almost extinct as a food source for producing meat and milk using an Artificial Insemination Technology approach, (3) Improving the genetic quality of Sahiwal Cross cattle by increasing the population through the Artificial Insemination technology method using FH cement. (4). Strategy for controlling and maintaining Sahiwal Cross Cattle as a Dual Purpose food source through the application of Artificial Insemination technology in Southeast Sulawesi Province. **Methods:** This research was conducted in South Konawe Regency, Konawe Regency, and Bombana Regency, Southeast Sulawesi Province from March to July 2023. This survey describes the Integrated Conservation Management of Sahiwal Cross cattle as a source of animal food for producing meat and milk (Dual Purpose). The approach used is integrated conservation management of animal husbandry in a qualitative descriptive manner, namely determining the population of Sahiwal Cross cattle that are still alive today, with an

interpretation of the development of Sahiwal Cross cattle both from the aspects of environmental adaptation, population increase and genetic quality as measured by the level of blood return (Blood Resiliences Index) through crossbreeding with the application of Artificial Insemination (AI) technology. **Results:** The results of the research show that: (1) The characteristics of the Tropical environment and surrounding forest areas, sufficient availability of agricultural waste as feed is an effort to adapt, preserve and develop Sahiwal Cross Cattle as a source of dual purpose animal food to increase the population and improve the productivity of the cattle business. in Southeast Sulawesi; (2) Integrated Conservation Management of Sahiwal cross cattle through the application of Artificial Insemination technology in a semi-intensive system is quite productive in Konda District, South Konawe Regency. (3) Increasing the population of Sahiwal cross cattle and their genetic quality through In-Situ Conservation/in-situ preservation, namely by strictly limiting crosses with local cattle types and efforts to maximize the application of Artificial Insemination (AI) technology for Sahiwal cross cattle with pure FH cattle as much as 2 (two) generations so that Sahiwal cross cattle as a dual purpose food source developed by farmers in Konda District can have a dairy type blood composition reaching 75%. (Bloods Resilience Index).

Keywords: Management, Livestock, Sahiwal Cross, Artificial Insemination, food

Local wisdom on the structure and construction of the Kajang House

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Abstract

Background and Aims: Bulukumba Regency is an area that is prone to earthquake and tsunami disasters. To the east of Bulukumba there is a zone of seabed expansion in Bone Bay which has the potential to cause a tsunami. Meanwhile, on land in Bulukumba Regency, there is the Walenae fault which has the potential to move land in the form of an earthquake. The aim of this research is to find out what the structure and construction of the traditional Kajang house is, which is considered a building that has existed for hundreds of years and has been proven to be resistant to earthquake shocks as one of the local wisdoms that must be maintained and developed. This uniqueness study is needed in order to increase regional capacity and resources related to the building construction process which will support disaster mitigation efforts, especially earthquakes. **Methods:** This research method was carried out by exploratory, descriptive and phenomenological analysis of several samples of traditional buildings that structurally survived earthquake shocks. Analysis is carried out by documenting, measuring, redrawing and three-dimensional interpretation of the building and its construction details. From these samples it can be seen that the traditional structural system and wooden connection construction of several houses observed has its own uniqueness and is part of a specific structural study aspect. **Results:** The research results show that the structure and construction of the Kajang house uses appropriate technology, the house module (size) concept is applied from body size (anthropometric) into multiple units, the "fair face" finishing

concept of the material is displayed according to the original.

Conclusion: Overall, the construction of the Kajang House meets all the principles of an earthquake-resistant house. Earthquake resistance in stilt houses in Bulukumba Regency is achieved through a stable structural system in each part, namely bottom, middle and top.

Keywords: Construction, Earthquakes, Kajang House, Local Wisdom, Structure

Maritime Industrial Literature: a Bibliometric Analysis Approach

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Abstract

Background and Aims: The maritime theme has always been associated with its rich resource potential. This potential is also very important to be researched in order to find policy formulations in its management. Research involving the maritime industry is considered to still need to be developed along with its sustainability. This article is a literature review research with bibliometric approach with a focus on the subject of maritime industry. Bibliometric analysis for a variety of reasons, such as to uncover emerging trends in the performance of articles and journals, patterns of collaboration, and research constituencies, and to explore the intellectual structure of specific domains in the extant literature. **Methods:** Data collection begins by determining a common theme, namely maritime. The search results using the database in Scopus.com found 15,185 documents consisting of articles. Literature is limited to the last 3 years of maritime research, namely 2020- 2022. Furthermore, document tracing is also limited to key words. **Results:** The end of the search found 244 documents that were then exported to the bibliometric tool VosViewer. The final stage is to conclude the findings based on the Frame Work literature and recommendations for future research in the maritime industry. **Conclusion:** The results of the study found Maritime Industry as the most comprehensive search theme. In particular, the maritime industry before 2022 did not show a significant increase, instead it experienced a drastic decline in 2021.

There are 7 institutions that are interconnected collaboratively in research within the scope of the Maritime Industry. The main theme in Maritime Industry research today is research on Shipping, Maritime Transportation, Ship, Digitalization, and Sustainable Development. The research keywords that are least commonly associated with the Maritime Industry are Creativity, Authority, Controllers, Container Demand Forecast, and Coastal Zone.

Keywords: Bibliometric, Maritime Industry, VOSviewer

Production Biogas of Polyethylene Plastic Biodigester

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Abstract

Background and Aims: Organic waste is a potential resource that can be utilized as an alternative fuel. Biogas is one type of alternative fuel produced from the decomposition of organic matter by methanogenic bacteria. Biogas has a high methane content, around 50- 70%, so it can be used as a fuel substitute for fossil fuels. The USIMAR Kolaka livestock barn produces a significant amount of organic waste, around 1 ton per day. This organic waste can be utilized to produce biogas. This study aims to examine the potential for biogas production from organic waste at the USIMAR Kolaka livestock barn, as well as to examine the design and construction of a polyethylene biogas biodigester. **Methods:** This study used a descriptive method. The research stages included: Primary data collection through observation and interviews at the USIMAR Kolaka livestock barn, Leak test on the polyethylene biodigester, Addition of cow dung to the biodigester input, Flame test on biogas. **Results:** The leak test results showed that no leaks were detected in the polyethylene biodigester. This indicates that the biodigester is able to properly maintain the gas pressure inside, there are no leaks in the joints and biodigester material, and there is no significant damage or defects in the entire biodigester structure. On the 2nd day, the biogas produced was able to ignite when tested with fire. This indicates that the biogas biodigester has successfully converted cow dung into a useful energy source. **Conclusion:** This study has shown that the polyethylene biogas biodigester has the potential to be a viable and sustainable solution for biogas production from organic waste at the USIMAR Kolaka livestock barn. The polyethylene biogas

biodigester is a lightweight, durable, and corrosion-resistant material that is easy to transport and install. It is also efficient at producing biogas, which can be used for a variety of purposes. The successful combustion of biogas after 2 days of testing indicates that the polyethylene biogas biodigester has the potential to reduce greenhouse gas emissions and provide a clean and renewable energy source for the USIMAR Kolaka livestock barn.

Keywords: Animal Husbandry, Biogas, and Polyethylene plastic

Seagrass Transplantation Using Three Methods: Anchor, Frame and Sandbag in Barrang Caddi Island, Spermonde Archipelago

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Abstract

Background and Aims: Globally, seagrass beds face various threats which cause the decline of seagrass area, including in Indonesia. Seagrass disturbance has a negative impact on the availability of habitat, food sources and reduces the potential for carbon absorption. *Enhalus acoroides* is one of the seagrass species with the largest morphology and has the widest distribution, making it vulnerable to threats. Therefore, protective efforts are needed to reduce the level of seagrass degradation in the form of transplants. The aim of the study is to determine the effective planting methods that can increase the survival and growth rates of *Enhalus acoroides*. **Methods:** There are 3 planting methods used, namely anchor, frame and sandbag. Each method has an area of 1 x 1 m, which is planted with 60 seagrass individuals. The parameters tested to determine the effectiveness of the planting method are the survival and growth rates of seagrass. **Results:** The results showed that after 1.9 years of observation, the seagrass survival rate and seagrass growth using the anchor method were 86.66% (52 ind/m²); 10 mm/day, sandbag 48.88% (29 ind/m²); 10.9 mm/day and frame 18.88% (11 ind/m²); 6.5 mm/day.

Keywords: *Enhalus acoroides*, seagrass transplant, survival rate, transplant methods

Seawater Intrusion Control Strategy in Makassar Coastal Aquifer

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Abstract

Background and Aims: Seawater intrusion poses a serious threat to groundwater supplies in coastal areas, especially with increasing sea level rise. This research focuses on developing effective management methods to protect coastal aquifers from pollution by salt water and ensure the sustainability of clean water supplies. The purpose of this study explores the potential of effective management methods based on local wisdom to protect coastal aquifers from pollution by salt water and ensure the sustainability of clean water supply. In the context of increasing seawater intrusion that threatens groundwater supply in the coastal area of Makassar city, an approach that integrates local knowledge and traditional-practices into **Methods:** This research includes monitoring seawater intrusion patterns, hydrogeological modeling, and physical and non- physical control strategies Data analysis includes Identification of areas vulnerable to seawater intrusion by sampling groundwater at various points to analyze salt levels and other water quality parameters to determine salinity levels and chemical parameters and understand intrusion levels, investigate local knowledge of coastal communities about water management, formulate strategies based on local wisdom, and apply them to minimize saltwater pollution. Through active cooperation with local communities. The strategy builds public awareness and concern for the sustainability of water resources. provide a strong foundation for policy decision-making and best practices in maintaining clean water supplies in coastal areas, maintaining the sustainability of coastal aquifer ecosystems, and

supporting the welfare of communities that depend on water resources. **Results:** The results of this study identify vulnerable areas, implementation of control wells, freshwater infiltration, and intrusion limiting structures while non-physical approaches such as community education programs and The development of sustainable water policies plays an important role in raising public awareness and supporting coastal aquifer management. **Conclusion:** physical and non-physical control that respects local wisdom in overcoming the problem of seawater intrusion, integration of local values is important in global efforts to protect clean water supplies and maintain the sustainability of coastal aquifer ecosystems

Keywords: Coastal aquifers, Environmental Sustainability, Hydrogeology, Intrusion, Water Management Policy

Seaweed Farmer Attitude for Climate Change Mitigation and Adaptation in Indonesia

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Abstract

Background and Aims: Seaweed is one of the most promising commodities in Indonesia, providing various economic and social benefits. Seaweed farming, in the perspective of climate change mitigation, can absorb carbon and for climate change adaptation, the system of seaweed farming can also absorb wave energy, raise the pH of the surrounding seawater, protect shorelines, and minimize the ocean acidification. This review paper aims to describe the attitude of seaweed farmers in climate change mitigation and adaptation in Indonesia. **Methods:** in order to address the aims, we review insights from different sources (literature, research projects, and public opinions services) over the last 10 years. **Results:** It was found that most farmers are still guided by their ancestral local wisdom to adapt and mitigate the climate change. Until these days, only few farmers try to adapt and mitigate of climate change for their farming activities by using modern technology. This attitude mostly caused by their low-level education and lack of extension program done regularly and continuously. In short, the farmers need more support from all stakeholders to solve many problems such site selection, seed quality, disease prevention, post-harvest and market management, and market management. **Conclusion:** The review found that the available research has been based mostly on qualitative analyses of case studies. More research that identifies causal relationships is

necessary. Data from surveys that are representative at the national or local levels will be very helpful to better understand farmer's attitudes. Finally, the complexity behind the analysis of farmers' climate change attitude implies that the collaboration between researchers from different disciplines, is almost a necessity.

Keywords: Attitude, climate change farmer, seaweed

Testing the Compressive Strength of Normal Concrete Mixes with Coconut Fiber at Cold Temperatures

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Abstract

Background and Aims: Environmental factors greatly influence the quality of concrete compressive strength over a long period. This research aims to find out what percentage effect cold temperatures have on the compressive strength of coconut fibre concrete. **Methods:** The author used experimental methods carried out in the Concrete Laboratory at Sembilanbelas November Kolaka University. The sample is cylindrical with dimensions of 50 mm x 50 mm. The number of samples was 72 samples. The percentage of adding coconut fibre to concrete is 0% and 0,5% of the cement weight. The temperatures are 10°C and 15°C with test durations of 30 minutes, 60 minutes, and 90 minutes for each test temperature. The compressive strength test was carried out at the age of 28 days with two treatments, namely the compressive test without a break and with a break after the sample cooling process. **Results:** The results of the compression test without a break for a temperature of 10°C, the addition of 0% coconut fiber was 19,85 Mpa. Addition of 0,5% coconut fiber 19,55 Mpa. Temperature 15°C, addition of 0% coconut fiber 19,95 Mpa. Addition of 0,5% coconut fiber 19,70 Mpa. Meanwhile, the press test with a break for a temperature of 10°C, the addition of 0% coconut fibre was 19,99 Mpa. Addition of 0,5% coconut fiber 20,09 Mpa. Temperature 15°C, addition of 0% coconut fibre 20,34 Mpa. Addition of 0,5% coconut fiber 20,15 Mpa.

Conclusion: This research concludes that the percentage of compressive strength of normal concrete compared to fibre concrete without breaks at a temperature of 10°C decreased by 1,49% and at a temperature of 15°C there was a decrease of 1,23%. Meanwhile, the percentage decrease in compressive strength with a break for a temperature of 10°C was 0,53%, while at a temperature of 15°C, there was an increase of 0,97%.

Keywords: concrete, coconut fiber, cold temperatures

The Composition of Coral Fish Species on Pelangi Island, Kolaka Regency

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Abstract

Background and Aims: Pulau Pelangi is one of the small islands located within the territory of Kolaka Regency. The land area of Pulau Pelangi is approximately 3,500 square meters, consisting of a stretch of white sandy beach. Pulau Pelangi possesses significant potential for biodiversity development. Studying the composition of fish species becomes crucial to understand the condition of aquatic biodiversity, which is key information in comprehending various ecological processes. This includes purposes such as assessing the richness of fish biodiversity, as fish constitute the largest group of vertebrates and serve as bioindicators for monitoring the health of marine ecosystem environments.

Methods: There were four stations according to the purposive sampling method. Data on corallivorous and herbivorous fishes were collected by using the underwater visual census with a 40 m² transect. Identify fish species through the use of Visual Census or Underwater Fish Visual Census (UVC), which was implemented for observing fish on coral reefs. The observations were conducted at the same transect locations as coral observations, covering an observation area of 5 by 25 square meters. The transect length for coral fish observation was 25 meters. Observations were conducted along the transect line, with a visibility range of 2.5 meters to the left and 2.5 meters to the right of the transect line.

Results: Based on the observations at four points on Pulau Pelangi, a total of 48

coral fish species from 16 families and 31 genera were recorded. A significant number of fish species, specifically *Chrysiptera oxycephala* and *Chrysiptera hemicyanea*, were discovered to be highly abundant, totaling 420 species, belonging to the family Pomacentridae. **Conclusion:** The presence of fish species indicates that the coral ecosystem conditions support the abundance of fish species on Pulau Pelangi.

Keywords: Coral, Fish, Island, Pelangi, Species

The Critical Period of Hybrid Maize Varieties Against Weeds

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Abstract

Background and Aims: The corn crop cannot be separated from the presence of weeds as crop disturbers. The presence of weeds often causes a decrease in yield and seed quality in corn crops. The yield reduction depends on the type of weed, density, duration of competition, and allelopathic compounds released by weeds. This study aimed to determine the age of the critical period of competition of hybrid varieties of corn plants against weeds, as well as corn grain production due to competition with weeds.

Methods: The research was conducted in a group randomized design consisting of seven weed control treatments based on corn planting age and repeated three times. Observation parameters consisted of plant height, number of leaves, cob length, cob weight, and cob circumference. The observation results were analysed followed by BNT test at 0.05% level.

Results: The test results showed that the critical period of competition of corn plants against weeds occurred at the age of 20-45 days after planting. The highest average corn cob weight occurred in the weed control treatment in the third week after planting which was 126.67 gr.

Conclusion: There was a compatibility between corn plants and weeds in the form of competition for nutrients and growing space, which affects production.

Keywords: critical period, hybrid corn NK 212, seed production, weed competition

The Effects of Different Benthic Diatoms on Growth and Survival Rate of Abalone Creeping Larvae

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Abstract

Background and Aims: Benthic diatoms play an important role as well as trigger the abalone larvae metamorphosis. They contain biochemical compounds that can stimulate the larvae to attach. The use of different types of benthic diatoms (mix diatom, *Navicula* sp., Crustose Coralline Algae (CCA) and *Amphora* sp.) was tested in this study to see the survival and growth of abalone *H. asinina* larvae. **Methods:** Rearing of the larvae was carried out using of 16 glass jars containing 3l of UV-sterilized seawater and one benthic diatom film plate (10x10cm²). The research was conducted using a completely randomized design. Initial density of each type of benthic diatom in this study was, namely: Mix diatoms (9,933cells/cm²), *Navicula* sp. (10,000cells/cm²), CCA (10,067cells/cm²) and *Amphora* sp. (9,933cells/cm²). **Results:** On the 6th day of larval rearing, it was found that the average survival rate of abalone larva fed different types of diatoms namely: Mix diatoms was 12.91%, *Navicula* sp. was 24.04%, CCA was 17.53% and *Amphora* sp. was 13.30%. Based on ANOVA tests, it was found that the benthic diatom feed had a significant effect on larval survival. Turkey Test showed the feeding treatment of *Navicula* sp was higher and significantly different from feeding other types of benthic diatoms. On the otherhand, after 6 days of rearing, the average growth of abalone larvae fed different types of diatoms namely: Mix diatom was 0.054mm, *Navicula* sp. was 0.038 mm, CCA was 0.137mm and *Amphora* sp. was 0.071mm. The ANOVA

showed significantly different on the growth of abalone larvae *H. asinina* using different diatoms as larvae feed. Turkey tests showed that the treatment of feeding of larva on CCA was significantly different from feeding larvae on other benthic diatom species.

Conclusion: This study showed *Navicula* sp. was the best benthic diatom to support survival rate and growth of *H. asinina* larvae.

Keywords: benthic diatoms, growth, *Haliotis asinina* larvae, survival

The Impact of Climate Change and Community Adaptation on Madura North Coast

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Abstract

Background and Aims : Coastal areas are vulnerable from the impacts of climate change. The majority of natural phenomena that occur, such as rising sea levels, floods, and strong winds, are felt by coastal communities. Participation and adaptation patterns are needed by local communities to anticipate climate threats. The aim of this research is to examine the impact of climate change and adaptation on the north coast of Madura, a case study in Tengket Village, Arosbaya District, Bangkalan Regency. **Methods:** This study uses qualitative and quantitative data, from local communities and mangrove ecosystem managers at north coastal area. The indicator of local community participation are conservation activity, groups, selection of seeds, replanting dead plants, eradication of pests, prevention of destruction and suggestions, input and criticism related to mangrove conservation. **Results:** The results show that the impact of climate change has been felt in Tengket Village, which is dominated by flooding due to overflowing seawater. Local coastal communities know and aware of the threat of climate change. The adaptation pattern carried out by the community involves planting, caring for and maintaining the mangrove ecosystem, minimizing pollution that occurs around mangrove forests, joining conservation groups, managing processed mangrove products, followed by the active role of village women's groups. Other activities include not cutting

down mangroves and providing education in surrounding villages. **Conclusion:** Local Community already aware and trying to adapt with the impact of climate change with mangrove conservation activity. This mangrove conservation activity is also supported by village and regional governments as a way of protecting the impacts of climate change and increasing welfare through the economic use of mangrove products.

Keywords: Adaptation, Climate Changes, Communities, Mangroves

The Impact of Coconut Fiber Addition on the Compressive Strength of Hollow Concrete

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Abstract

Background and Aims: Concrete without sand is a part of lightweight concrete made from a mixture without using sand. Because it does not use sand, the resulting concrete has voids between the crushed stone, and the distribution of the voids in the concrete mixture is even and connected, which ultimately causes a reduction in the density of the concrete. The addition of coconut fibre to concrete without sand is expected to increase its compressive strength, making it better able to withstand compressive loads. **Methods:** This research method uses experimental methods, making samples and testing carried out in the Concrete Laboratory of Sembilanbelas November University, Kolaka. The sample size used was 15 x 30 cm with a total of 12 samples. Variations in adding coconut fiber are 0%, 18%, 38%, and 58% of the cement weight. The age of the concrete used in the test is 28 days with a design compressive strength of f_c' 10 Mpa. The compressive strength obtained in the research at a concrete age of 28 days was that by adding 0% coconut fibre, the compressive strength was obtained at 7 Mpa, the addition of 18% coconut fibre obtained a compressive strength of 9.8 Mpa, the addition of 38% coconut fibre obtained a compressive strength. amounted to 11.8 Mpa, and the addition of 58% coconut fibre obtained a compressive strength of 8.6 Mpa. **Results:** From the data, it was found that the addition of 38% coconut fibre to hollow concrete experienced an increase of 18% in the compressive strength of the

planned concrete. **Conclusion:** So it meets the standard requirements, namely ACI 522R of 2.8-28 Mpa.

Keywords: Hollow Concrete, Fibre, Compressive Strength

The Impact of The Nickel Mining Industry on Infrastructure and Environmental Conditions for Communities in Kolaka District, Southeast Sulawesi

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Abstract

Background and Aims: The areas in Southeast Sulawesi which have long been engaged in laterite nickel mining activities are the Kolaka area, especially the Pomalaa area in the south and the Wolo area in the north. This mining activity, in addition to providing benefits to central and regional governments, will also impact these activities from the economy, infrastructure, environment and social distribution patterns of affected and unaffected communities. This research focuses on the impact caused by the existence of a nickel mining company in terms of infrastructure and environmental aspects on the community around the company. The purpose of this research is to provide information to nickel companies and the government so that they can monitor the company's CSR policies and Kolaka Regional Government's policy programs for residents affected by the mine. **Methods:** The method used uses a qualitative method through the sampling method. The instrument used consisted of distributing questionnaires to 30 respondents in the Pomalaa and Wolo regions. The criteria used for respondents are local communities directly affected by mining. Interview data and field observation data were analyzed using quantitative methods with presentation of values and graphical analysis. **Result:** According to the results of data analysis in Pomalaa sub-district, the impact of mining activities is 80% positive and 20% negative of infrastructure development. The impact on the environment is 60% negative and 40% positive. The District of Wolo for the impact on its infrastructures is 63%

negative and 37% positive. While the impact on the environment is 67% negative and 33% positive. The development of infrastructure in the Pomalaa sub-district is reflected in the rapid construction of public facilities such as schools, hospitals, places of worship and offices. In addition, road construction and street lighting appear to be better than before the existence of the mine. **Conclusion:** The groundwater around residents' homes is polluted, which negatively impacts this area. Communities in the Wolo sub-district receive less infrastructure impact from nickel companies than negative impacts. Land disputes, damage to agricultural land, flooding and air pollution are negative impacts experienced by residents from mining activities in their area.

Keywords: Environment, Infrastructure, Mining activity, Nickel laterite

The Production of Compost from Bali Cattle Manure and Rice Straw

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Abstract

Background and Aims: In addressing contemporary agricultural challenges, sustainable solutions are sought to reduce farmers' dependency on chemical fertilizers, enhance soil fertility, and foster environmentally friendly farming practices. Compost fertilizers derived from organic waste offer a promising solution to these challenges. Bali cattle feces and rice straw are two abundant organic wastes in Indonesia, with a significant potential for compost production. However, the composting process can be challenging and time-consuming, especially for large-scale production. This study aims to overcome these obstacles by developing an innovative and efficient composting process that utilizes a local biostarter to transform Bali cattle feces and rice straw into high-quality compost. **Methods:** The study was conducted in Mowewe District, East Kolaka Regency, Indonesia, from January to July 2023. A mixture of 100 kg cattle feces, 10 kg rice straw, and 10 mL of a local biostarter, combined with 1 L of water, was used to develop the compost. The composting process involved layering the materials and incorporating the biostarter. Measurements of pH and temperature were conducted using a 4 in 1 Soil Survey Instrument, and descriptive statistical analysis was applied to the data. **Results:** The results of the study revealed a final pH of 7, a temperature of 27°C, and compost resembling soil in color and odor. This indicates the successful development of an efficient composting process that transforms Bali cattle feces and rice straw into high-quality compost using a local biostarter. **Conclusion:** This study has demonstrated the successful

development of an efficient composting process that transforms Bali cattle feces and rice straw into high-quality compost using a local biostarter. This offers promising prospects for sustainable agricultural practices in Indonesia.

Keywords: Biostarter, compost, Bali cattle feces, Rice straw, and Sustainable agriculture

Upwelling Identification as Potential Fishing Ground Indicators of Skipjack (*Katsuwonus pelamis*) in Banda Sea

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Abstract

Background and Aims: Banda Sea is one of the fisheries management areas of the Republic of Indonesia (WPPNRI) 714. Skipjack tuna (*Katsuwonus pelamis*) become one of the potential fisheries resources in those areas. To optimize the catches of Skipjack tuna by the fishermen, need to identify the fishing ground area by identifying the upwelling phenomena in those areas. The purpose of this research was to identify several parameters that affect skipjack distribution in Banda Waters, which are sea surface temperature and chlorophyll-a from the upwelling phenomenon. **Methods:** Sampling was conducted from January until December 2022 by the fishing base at Pelabuhan Samudera (PPS) Kendari which is located in West Banda Water and skipjack catches data in East Banda Waters which is located at the fishing base in Sorong fishing port. Image data was used monthly aqua MODIS satellite, upwelling identification by using regression analysis by using sea surface temperature image data and chlorophyll-a which were processed by using ENVI and ArcGIS software. **Results:** Oceanographic parameters identification result against skipjack distribution indicated that upwelling was in correlated. However,

what is interesting is that skipjack fishing grounds are formed between 2-3 weeks after the upwelling phenomenon occurs. Sea surface temperature was correlated significantly against fishing production, skipjack at Banda Waters tend to fill space at the ocean in an approximation of 26-28.5°C of sea surface temperature. Chlorophyll-a was significantly correlated against skipjack production with an approximation of 0,2-1,5 mg/m³ of chlorophyll-a in the fishing potential area. **Conclusion:** The upwelling phenomenon and several oceanographic parameters (i.e. Sea surface temperature and Chlorophyll-a) could be the fishing ground indicator for the Skipjack tuna in the Banda Sea to optimize the productivity of fishermen.

Keywords: Banda waters, chlorophyll-a, skipjack, upwelling

Utilization of Slag as an Ameliorant Material to Improve Soil Chemical Properties On Post-Mining Lands: A Case Study At the South Konawe Mining

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Abstract

Background and Aims: PT. Antam UBPN in Southeast Sulawesi produces 70,000 tons / year of nickel, in the category of Toxic and Hazardous Materials (B3). Mg and Fe and allows plants. It is possible that this slag can be used as an improved material to improve the chemical properties of post-mining land soils to increase the level of soil fertility. And so far has been used as a filler material on the home page of the community with a relatively low level of use, so that it still leaves a large amount of waste or waste. This study would be useful for post-mining land use, so that the claim-revegetation process is successful at low cost with abundant materials. And there have been studies conducted in this field to improve the chemical characteristics of soil in tomato plants (Siswanto and Wanti, 2008). Therefore, this study aims to: (a) to know the chemical characteristics of the soil on nickel ore post-mining reclamation land, (b) the effectiveness of slag in increasing the fertility of reclamation areas after nickel mining.

Methods: The approach of the method used is at the laboratory scale, where the simulation of the use of this slag will be tested in the laboratory. Engineering Program in Environmental Management and Post-Mining Land Reclamation Faculty of Science and Technology, USN Kolaka. The study was organized according to a complete randomized factorial design, in which the

factor I was OB Konawe Selatan. Factor II is the sol / FeNi composition. **Results:** On the basis of the determination, the results of the plant indicators were obtained to observe the improvement of the chemical properties of the soil of South Konawe, as indicated by the trend of the growth indicators and the developments which continued to increase during the measurement period. **Conclusion:** Thus, it has been researched that slag can be converted into improvement to improve the chemical properties of inexpensive and abundant slaughter lands.

Keywords: Slag, Ameliorant, The Chemical Characteristics, Post-Mining Land

Section Human Resource Development

Abstraction Tasks Design in Constructing Relationships among Quadrilaterals

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Abstract

Background and Aims: Abstraction is an essential aspect of study in mathematics education because, with abstraction, a student will construct the concept to be learned. Still, tasks that can trigger students to construct relationships between quadrilaterals have yet to be found. Therefore, this research aims to design abstraction tasks in constructing relationships among quadrilaterals. **Methods:** This research is one of the stages of research carried out by researchers, developing an abstraction task before the task is used as a tool in research. The research method used in this study is the instrument development method adapted from Cohen. The stages of the task are test conceptualization and test construction. The subjects in this study were three validators: two mathematics education lecturers and one teacher. Data collection tools used were tasks and observation sheets. **Results:** The results of the test construction found that the abstraction tasks are valid and can proceed to the research.

Keywords: Abstraction, Constructing, Relationships among Quadrilaterals, Tasks Design

Analysis of Organizational Performance and The Factors That Influence It: Study At The Kolaka Regency National Land Agency

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Abstract

Background and Aims: The study aimed at: (1) investigating and finding out the performance of organization at National Land Board of Kolaka Regency. (2) Investigating and finding out the factors influenced the performance of organization at National Land Board of Kolaka Regency. **Methods:** The study employed qualitative descriptive and qualitative descriptive analysis technique and the information obtained that: (1) the responds of National Land Board of Kolaka Regency remains low due to the program of land certification service is not yet provided, especially the approach to the community, to find out the complains of the community, and their aspirations, hence, the service on land owning is difficult, measuring and mapping, site, and the issued of certification remains unavailable, the accountability of National Land Board of Kolaka Regency has not yet transparency to the community regarding to the budget needed by the community in each of the service, the service given to those who are prepared to pay to the committee, office's productivity yet in optimum and needed to be improved, the performance of National Land Board Service is simple and easy, moderate, however, community said that most of the service given is difficult. (2) factors influenced the performance of the organization at the National Land Board of Kolaka regency are influenced by: unclear job desk and overlapping job, less of experiences is dominating the performance of the organization, the information applied is communicative, means that it runs based on the norms and etiquette between

leader and staffs. **Conclusion:** it is suggested to the office to formulate a program or activity that could approach the community like interactive talk through radio or television, supervision so that the community feels that their needs are concerned. The service application the office needs to be consistent based on the regulation applied. Satisfactory service is required by the community without any other exceptions.

Keywords: performance of organization

Effectiveness of Corporate Social Responsibility of Mining Companies in Improving the Quality of Life of Coastal Communities in Kolaka Regency

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Abstract

Background and Aims: Article 74 of Law no. 40 of 2007 concerning Limited Liability Companies stipulates the obligation of all companies in the natural resources sector to carry out social and environmental responsibilities or referred as Corporate Social Responsibility (CSR). Kolaka Regency as the regency with adequate mining object locations, should be able to support improving the quality of life, specifically the community who live in coastal areas as the most affected parties both directly and indirectly by mining activities. The aim of this research is to determine the implementation of CSR of mining companies in Kolaka Regency and to find out how the CSR implementations can improve the quality of life of the coastal communities in Kolaka Regency. **Methods:** This type of research is empirical juridical which aims to find out implementation of the rule of law in the field. The population in the study were all mining companies in Kolaka district. Based on this population, two samples were drawn, one each for a state-owned mining company (PT Antam, Tbk) and a private mining company (PT Ceria Nugraha Indotama). Data was collected by library and field research. Data analysis used in this study is a qualitative analysis that presented descriptively. **Results:** Based on research conducted on samples, the results obtained that PT. Ceria Nugraha Indotama helping fisherman groups in Wolo Village with donation of fishing boats. Implementation of PT Antam, Tbk by its Daya Bergala and Coral Karamba Rehabilitation program. The program empowers coastal

communities together with the Bajo Tribe around the Pomalaa coastal area by building fish apartments and carrying out coral reef transplants. **Conclusion:** The mining company in Kolaka Regency have implemented the regulation mandatory and are expected to be able to improve the quality of life of the community while preserving the coastal environment.

Keywords: Coastal, Corporate Social Responsibility, Mining

Evaluation of Information Technology Innovation Management Planning using the COBIT 5 Framework Approach (Study at the Jasa Raharja Samsat Kolaka Representative Office)

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Abstract

Background and Aims: Optimizing the value achieved from the implementation of information technology, both internal management and public services in government institutions/organizations, requires the implementation of information technology governance. Apart from that, the benefits of IT governance will also be felt by the public through better and more transparent quality of public services. **Method:** This research is a qualitative study which aims to reveal the extent to which the information technology innovation governance planning of the Jasa Raharja Representative Office (KPJR) as a state-owned enterprise in the social insurance sector is appropriate, using the COBIT 5 (Control Objectives for Information and Associated Technology) framework. The initial stage is identifying COBIT IT Goals, then process selection is measured through goal mapping which results in a research focus on the APO (align, plan, Organize) domain, the APO04 (manage Innovation) process in the COBIT 5 framework which will be evaluated. Based on the results of the RACI (responsible, Accountable, Consulted, Informed) graphic mapping, the RACI mapping results showed that there were 4 (four) respondents who played a role and were directly responsible for the governance of innovation management. Measuring the level of process maturity (maturity level) using the Process Assessment Model (PAM) after obtaining the level of

capability, will measure the gap determination. **Results:** The results of this research show that the maturity level of the evaluation process carried out using the COBIT 5 framework using the APO04 process for managing innovation is at level 2 (managed process) with a capability level of 63%, with a gap of 1.37 to achieve the desired capability level by the organization. **Conclusion:** IT innovation management processes in achieving management performance indicators and work results management are fulfilled well. This shows that the IT innovation management governance process at the Jasa Raharja Representative Office (KPJR). This has been implemented in a more organized manner (planned, planned and adjusted) and the resulting product has been properly defined, controlled and maintained.

Keywords: APO04, COBIT 5, Evaluation, Information Technology.

Exchange Rate of Rice Farmers in Polinggona District, Kolaka Regency

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Abstract

Background and Aims: the Farmer Exchange Rate (NTP) is one of indicators to measure the level of farmer welfare. The farmer's exchange rate can show the exchange power of agricultural products produced in relation to consumption costs and agricultural production costs. If the farmer's exchange rate is high, his purchasing power will also be relatively stronger. This research aims to determine the welfare conditions of farmers based on the exchange rates of farmers and the factors that influence the exchange rates of lowland rice farmers in Polinggona District, Kolaka Regency. **Methods:** The sample determination in this research was carried out using the cluster sampling method, while the data analysis methods used in this research were farmers exchange rate analysis and 1 multiple linear regression analysis. **Result:** The research results show that the welfare condition of rice farmers is in the prosperous category because the NTP value obtained is greater than 100, which is 104.71. The amount of production, total expenses and total production costs have a significant effect on the NTP of lowland rice farmers, as indicated by the t-count value greater than the t-table value and the significance probability value less than the alpha value of 0.05, while the t-count value is greater than the t-table value and the probability of significance value is less than the alpha value of 0.05, while The number of dependents in the family has a insignificant effect on the NTP of rice farmers in the rice fields of Polinggona

District, Kolaka Regency, which is indicated by the t-count value lower than the t-table value and the significance probability value higher than the alpha value of 0.05. **Conclusion:** Rice farmers at the research location are in the prosperous category.

Keywords: multiple regression, NTP, rice farmer, welfare

Factors Influencing Employee Work Motivation at the Department of Labor and Transmigration in Kolaka Regency

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Abstract

Background and Aims: The purpose of this research is to identify the factors that influence employee work motivation at the Department of Labor and Transmigration in Kolaka Regency. **Methods:** The research methodology employed in this study is quantitative, using a survey approach. The research is conducted at the Department of Labor and Transmigration in Kolaka Regency. The population and sample of this research are based on the number of customers, totalling 112 individuals. The data sources used in this research include both primary and secondary data. **Results:** The research findings indicate that the factor of recognition falls into the "good" category, with an average percentage of 83.14%. This suggests that the provision of job seeker identity cards is well-received, reflecting positive recognition and appreciation of employees. The factor of communication, however, is assessed as "less than good" with an average score of 3.89 and an average percentage of 77.75%, highlighting the need for improvement in internal communication within the Department of Labor and Transmigration to enhance employee motivation. The factor of delegation of authority is also considered "less than good" with an average percentage of 66.29%, indicating the necessity of improvements in delegating authority to enhance work motivation. Lastly, the factor of reciprocal attention falls into the

"less than good" category with an average score of 3.84 and an average percentage of 77.53%, underscoring the need for enhancements in the quality of service provided to job seekers.

Conclusion: This research highlights the importance of recognition, communication, authority delegation, and reciprocal attention in influencing employee work motivation within the Department of Labor and Transmigration in Kolaka Regency. The organization's continued focus on enhancing these factors can contribute to a more motivated and satisfied workforce. This, in turn, can lead to increased productivity and the achievement of the department's goals.

Keywords: Motivation, Employees

Financial Performance Analysis of PT. Weha Transportasi Indonesia Tbk. During and After The COVID-19 Pandemic

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Abstract

Background and Aims: This study aims to determine: the level of success of the financial performance of PT Weha Transportation Indonesia Tbk. During and After the Covid-19 Pandemic in 2019, 2020, 2021 and 2022. Judging from the analysis of financial ratios.

Methods: This research uses quantitative methods with a descriptive approach. The data collection technique used in this research is library research. The population of this study are all financial statements of PT Weha Transportation Indonesia Tbk. 2019, 2020, 2021 and 2022. While the sample of financial statements in the form of balance sheets and income statements from 2019, 2020, 2021, 2022. The data analysis method used in this research is descriptive quantitative and financial ratio testing which includes liquidity ratios, solvency ratios, profitability ratios, and activity ratios. **Results:** The results showed that the financial performance of the company PT Weha Transportation Indonesia Tbk. Experienced a decline in 2020, namely when the Covid-19 pandemic occurred, and the financial performance of transportation companies before Covid-19 was better than during the Covid-19 pandemic, and experienced an increase after Covid-19.

Keywords: Financial Performance, Liquidity Ratios, Solvency Ratios, Profitability Ratios, Activity Ratios, and Market Valuation

Implementation of the Penta-helix Model in the Development of the Tourism Sector in Merauke Regency

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Abstract

Background and Aims: The government supports the development of tourism as one of the economic pillars that can generate foreign exchange, increase local income, and reduce unemployment through the creation of new jobs in the tourism sector. However, tourism development is complex, requiring the involvement of various parties, including the government, private sector, academics, community, and media. This approach is known as the Penta-helix Model, which proposes a synergistic strategy for managing the tourism industry. This research aims to analyze the implementation of the penta-helix model in the development of the tourism sector in Merauke Regency. **Methods:** The research method uses a qualitative approach that is analyzed descriptively. Data collection is conducted through in-depth interviews, observation, and documentation. The data processing and analysis technique uses the Miles and Huberman model, namely: data reduction, data display, and conclusion drawing/verification. The informant selection technique uses purposive sampling. The informants are tourism office, development planning agency at sub-national level, academic, private Sector (tourism entrepreneur), media and community. **Results:** The results showed that the implementation of the penta-helix model in Merauke Regency has not been effective. Tourism development in Merauke

Regency still seems to be carried out individually by each penta-helix actor (Government, Private, Academics, Media and Society). Each of these actors is active or carries out activities based on their interests because there is no cooperation from the government. However, some actors such as academics and communities have cooperated or collaborated with the government in tourism development in Merauke Regency. **Conclusion:** The conclusion of this research is the need for further efforts to build synergy among the government, private, academics, media, and society to achieve sustainable and comprehensive tourism development in Merauke Regency.

Keywords: Indonesian Tourism, Penta-helix Model, Tourism Development, Tourism Collaboration

Kelor Power: Transforming Market Dynamics - Digital Marketing Strategies for BUMDesma Wanua Tonra in Tonra District, Bone Regency

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Abstract

Background and Aims: Moringa leaves offer various benefits for human health. Some of its main advantages include being rich in nutrients (such as vitamin A, vitamin C, vitamin E, vitamin K, and several minerals like calcium, iron, and potassium). Moreover, moringa leaves are abundant in antioxidants, which can support the immune system, lower blood sugar levels, promote heart health, improve bone health, enhance skin health, reduce inflammation, and increase hemoglobin levels. The lack of public knowledge in marketing products through social media or digital marketing has constrained the sales process for products made from moringa leaves. In fact, utilizing social media or digital marketing can significantly increase sales for Bumdesma Wanua Tonra based on the local potential in the Tonra sub-district. The purpose of this research is to identify digital marketing strategies to enhance Bumdesma's income by leveraging the local potential for moringa leaves. **Methods:** The digital marketing analysis of moringa leaves involves a thorough examination utilizing the SWOT analysis method. This research falls under the category of qualitative research, aiming to provide a comprehensive explanation of phenomena by collecting extensive data through observation techniques, interviews, and documentation. **Results:** Based on a SWOT analysis, the study reveals that BUMDesma

Wanua Tonra's lack of digital marketing strategies and an effective marketing plan represents weaknesses. However, the Tonra District market presents untapped opportunities (opportunities) for growth and development. To leverage these opportunities and address the identified weaknesses, BUMDesma Wanua Tonra should focus on optimizing its marketing strategy, with a particular emphasis on digital marketing (threats). This proactive approach can help the organization enhance its market potential and competitiveness. **Conclusion:** In conclusion, the SWOT analysis reveals that BUMDesma Wanua Tonra exhibits several weaknesses. However, the Tonra District market offers untapped growth opportunities. To address these weaknesses and harness the available opportunities, BUMDesma Wanua Tonra should prioritize optimizing its marketing strategy, especially in digital marketing, to enhance its market potential and competitiveness.

Keywords: Digital Marketing, Strategy, SWOT analysis

Merdeka Belajar and Micro Teaching: Transformation of Learning Methods in the Digital Age

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Abstract

Background and Aims: This article will explore how the dynamics of teaching and learning in the Digital Age. This study contributes to the discussion on how education should position itself in changing times, including in facing the digital age. **Methods:** This study employs a qualitative approach, primarily relying on extensive library research and analysis of existing literature. Through in dept exploration of relevant scholarly works, this research aims to shed light on the multifaceted dimensions of teaching and learning in the digital era. **Results:** The findings from the extensive library research reveal several pivotal aspects that characterize teaching and learning in the digital age. One of the foremost distinctions is that learning in this digital era exhibits distinct characteristics when compared to traditional pedagogical methods. This discrepancy can be attributed to the fact that the current generation, often referred to as digital natives, has grown up immersed in the digital realm. Their upbringing and formative experiences are deeply intertwined with technology, leading to a unique set of learning preferences and behaviour. **Conclusion:** Considering the pervasive influence of the digital world on today's students, educators must adapt their teaching methodologies accordingly. The traditional model of education, designed for a different era, may no longer suffice. Teachers must recognize that contemporary students have fundamentally different patterns of information consumption and engagement. To remain effective partners in the educational process, teachers must adeptly design learning activities that align with the digital inclinations of their

students. This shift is essential to ensure that students receive the wealth of information available in the digital age within the constrained timeframes of formal education. Consequently, education must evolve in response to the digital age, not merely as an option but as a requisite transformation to effectively engage and educate the digital-native generation.

Keyword: Teaching, Learning, Digital Era

Micro, Small and Medium Enterprises (MSME) Development Strategy in Kendari City

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Abstract

Background and Aims: MSME is an abbreviation for Micro, Small and Medium Enterprises. MSMEs can reduce the unemployment rate, namely by opening job opportunities for job seekers. MSMEs are also an asset that can help economic growth in Indonesia. Therefore, it is important to carry out research on the development of MSMEs which must always develop in terms of quantity and quality. This research aims to determine the Development Strategy for Small, Micro and Medium Enterprises in Kendari City.

Method: The type of research used is qualitative research. The qualitative method is descriptive research and uses analysis. Data collection techniques include observation and interviews with informants. The source of informants was the Data and Information Analysis unit at the Department of Trade, Cooperatives, Small and Medium Enterprises (Disperdagkop).

Results: The development strategy carried out by the Kendari City Regional Government is quite effective, seeing that the number of MSMEs in Kendari City (3 years) has increased every year. In this case, the Kendari City Regional Government has provided aid funds, provided assistance to MSME actors and also carried out training activities for MSME actors. However, MSME players have not developed much in terms of business digitization, in this case changing marketing to online or digital. **Conclusion:** Micro, Small and Medium Enterprises (MSMEs) play a very big role in economic growth in Indonesia. In this research entitled "Micro,

Small and Medium Enterprises (MSME) Development Strategy in Kendari City", based on the results of research that has been carried out, the MSME development strategy is quite effective, which can be further improved if MSME actors can digitalize the process. business and also develop creative products.

Keyword: Development, MSMEs, Strategy

Performance of the Department of Cooperatives and Small and Medium Enterprises Guidance and Development of Micro Small Enterprises: Study of Lamokato Village, Kolaka District, Kolaka Regency

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Abstract

Background and Aims: This research is motivated by the duties and responsibilities of the Cooperatives and UMKM Service in providing guidance and business development for MSEs in order to realize economic prosperity for the community, especially in Kolaka Regency, at the sub-district and local or village levels. This research aims to examine the performance of the Cooperative and Business Department Small and Medium Enterprises in coaching and developing micro and small businesses in Lamokato Village. **Methods:** The methods used in this research were analyzed using a qualitative descriptive approach. namely reviewing primary data and secondary data with an interactive analysis model. This research was conducted in Kolaka Regency in Lamokato village and the Kolaka cooperative and UMKM office. **Results:** The results of the research show that the performance of the Cooperatives Service has not been running well, this can be seen from the provision of guidance in the form of training to MSEs actors from the Cooperatives Service which has not been consistent with the time that has been determined. In conducting data collection on MSEs actors, the Cooperatives Service only carry out data collection at the location of training activities. The mentoring process carried out by MSE facilitators for MSE actors is still rarely carried out, as well as handling complaints from MSE actors regarding the provision of aid funds that will be provided, has not yet been realized for all MSE actors who have submitted

applications for aid recipients, the reality is only around 30 new MSE actors received assistance funds. **Conclusion:** The conclusion from this research study is that the performance of the cooperative and MSME services in coaching and developing the capacity and capability of MSMEs in Lamokato village has not been optimal, especially regarding the accuracy and consistency of the training and guidance provided to the community.

Keywords: coaching and development, Performance, small micro medium businesses

Probabilistic Thinking of Prospective Mathematics Teacher Students In Higher College Mathematics Learning Based FD and FI Cognitive Styles

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Abstract

Background and Aims: This article aims to describe the results of creative mathematical thinking and differences in cognitive styles among prospective mathematics teacher students. **Methods:** The research method used in this research is method Systematic Literature Review (SLR). The SLR method is used to identify, review, evaluate, and interpret all available research on the topic area of interest. Data collection was carried out by documenting and reviewing all articles related to solving mathematical problems. The articles used were more than 10 articles indexed by Scopus in Q1 & Q2 and accredited by SINTA in rankings 1 & 2. **Results:** The results of the research showed that the probabilistic thinking skills of prospective mathematics teacher students as well as cognitive styles, especially Field Dependent (FD) and Field Independent (FI) has different cognitive levels. Tasks designed to recognize probabilistic thinking in mathematics are used for students aged 17-21 years and are designed to overcome problems in the world of tertiary level mathematics education. Even though students have obstacles in solving problems with 4 probabilistic procedures, some other students are capable and critical in thinking probabilistically, where students can independently solve problems by understanding the concept of random experiments, able to analyze in making the right decisions in the sample space,

able to predict things that will happen in an event, and able to solve the probability of an event using the concept of binomial distribution, apart from the cognitive aspect, the role of the affective aspect really has an impact in solving students' problems by looking at the differences in Field Dependent (FD) cognitive styles and Field Independent (FI), this makes cognitive style a very important aspect because it can see the skills of prospective mathematics teacher students in solving problems and drawing conclusions independently and in groups, in addition to having verbal skills, especially in learning college mathematics

Keywords: Probabilistic Thinking, Field Dependent (FD) and Field Independent (FI), Cognitive Styles.

Project HTS (How To Stimulus) as an Effort to Internalize the Learning Experience Students in Understanding Student Development

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Abstract

Background and Aims: The most important experience for a student is experience in the form of educational lessons, which are centered on a meaningful goal, in accordance with work professionalism, as well as developing soft skills for the student himself. This research aims to determine the response of USIMAR Kolaka Islamic Religious Education study program students to the HTS (How To Stimulus) project as an effort to internalize experience learning in understanding student development.

Methods: This research is descriptive research with a qualitative approach. Participants in this research were second semester students of the Islamic Religious Education Study Program at USIMAR Kolaka. Data collection techniques used were observation, interviews, and distribution of questionnaires. Meanwhile, the research instruments used were observation sheets, interview sheets and questionnaires. The data analysis used is descriptive data analysis technique. **Results:** Results of the research show that: 69.6% of the children chosen by students in carrying out the project were children aged (3-5 years) and 21.7% were children aged (1-2 years), 70% of the children chosen by students in this project is about children who are contaminated with gadgets, 80% of the parents of children who took part in this project gave a positive response to changes in children's playing patterns, 100% of students gave a positive response to the HTS

project in providing educational values and contributing to their mindset as candidates educators, 100% of students responded positively to the HTS project as an effort to internalize experience learning in understanding student development if they later become educators. **Conclusion:** 100% of USIMAR Kolaka Islamic Religious Education study program students gave a positive response to the HTS (How To Stimulus) project as an effort to internalize experience learning in understanding student development.

Keywords: Experience Learning, Project HTS, Student Development

Proportional Reasoning: Bibliometric Analysis of the Mathematics Literature

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Abstract

Background and Aims: Proportional reasoning may be one of the most fabulous ideas in mathematics. That's something that must be understood well in real-life situations. As well as it becomes the basis for further mathematics. Based on research trends, this can provide opportunities to be developed and linked to things that are still lacking and have not even been studied by other researchers. **Methods:** This research aims to examine publications related to proportional reasoning according to their specific characteristics. For this purpose, bibliometric analysis methods were used in the research, which make it possible to follow historical trends in publications, follow developments in the field, and reveal specific features of the field of study. The advanced search feature was used in the search, and the keyword "proportional reasoning" limited publications to approximately the last ten years, namely from 2011-2022. From the search results via Publish or Perish, 204 journal publications were obtained in the Scopus database, filtered according to special publications in international journals. The authors' most used keywords, bibliography incorporation and familiar quotations were analyzed and visualized via Vosviewer software. **Results:** As a result of the analysis, the keywords most commonly used by authors in

publications related to this field are proportional reasoning, proportion, working memory, cognitive development, spatial cognition, mathematics, ratio, reasoning, and fractions. As a result of the co-citation analysis of the authors, the first three authors were the most influential in mathematical reasoning, respectively: Van Dooren and Wim, Verschaffel, Lieven, and Vanluydt, Elien. **Conclusion:** In general, from the keywords used by authors in publications, researchers determine that the keyword most widely used for this field is "proportional reasoning". Get information on authors and their connections who are often quoted and are among the leading authors in their fields. From the information obtained, if it was linked to other keywords, there were still gaps or opportunities for further research.

Keywords: Bibliometric Analysis, Proportional Reasoning, Bibliometric Mapping

Quality of Public Services in New Installations (Study at the Regional Drinking Water Company (PDAM) Tirta Dharma, Kolaka District, Kolaka Regency)

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Abstract

Background and Aims: The quality of new installation services at PDAM Kolaka should increase in line with the increase in the number of new installations which continues to increase from 2020 to 2022, this is a form of PDAM's commitment to quality-based public services. Therefore, this research aims to examine the quality of public services in new installation services at the Tirta Dharma Regional Drinking Water Company (PDAM), Kolaka Regency. **Methods:** The research method was carried out using a qualitative descriptive approach. The location for this research is the PDAM Office, Kolaka District, Kolaka Regency. The informants in this research were PDAM employees and community elements. The type and source of data in this research uses primary data, namely data obtained directly from research informants through data collection techniques, and secondary data is data obtained through library research, namely by interviewing and analyzing literature in the form of books, magazines, and newspapers related to the problem under study. **Results:** The results of this research show that the service for installing new connections at PDAM Kolaka District is still low. This can be seen from the transparency aspect where the nature of openness in serving the community is still lacking, because the information provided needs to be clarified, one of which is information when planning the cost budget in the engineering section. The accountability aspect regarding the company's eligibility for the regulations set by law or company rules for new connection installation services is still

lacking, because the service for installing new connections, service staff still use a system that they created themselves to make their work easier, the Conditional Apek, namely the employee's willingness to serve the community. not yet good because the existing employees do not respond to complaints or wishes from the community so that the community receives less attention from the officers regarding the new connection installation services provided. **Conclusion:** The conclusion of this research is that the quality of public services in installing new connections in PDAM Kolaka District is still low, especially from the aspects of transparency, accountability and equal rights that must be given to customers or the community.

Keywords: PDAM Tirta Dharma, quality of public services

Relationship Between Knowledge Sharing and Innovation Performance: Systematic Literature Review Based Vosviewer

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Abstract

Background and Aims: In today's digital era, business organizations recognize that innovation activities play an important role for the success and sustainability of business organizations. In addition to human resource management and operational challenges, fierce competition among businesses also demands innovation activities to overcome ever-changing and uncertain circumstances. In improving innovative performance, knowledge is the most important resource that an organization must have. However, organizations must change the way they acquire innovative resources or knowledge externally or globally to survive and develop further. Therefore, analyzing the relationship between knowledge sharing and innovation performance is of great theoretical and practical importance. The main purpose of this study is to review and critique the literature on the relationship between Knowledge Sharing and Innovation Performance using data accessed from Scopus- based online databases. **Methods:** This article conducts a systematic literature observation (SLR) on the relationship between knowledge sharing and innovation performance. The research corpus is based on the systematization of research protocols. Based on the search results on Scopus based data, 126 articles were found, but after going through the SLR stage using the keyword criteria Knowledge Sharing and Innovation Performance, documents in the form of

articles/journals, specifically in the field of MSMEs and articles/journals in English, only 24 articles were found that were suitable. with the topic. **Results:** The findings show that Knowledge sharing which greatly contributes to improving innovation performance is Knowledge Sharing from the perspective of knowledge innovation, namely knowledge sharing as a process in which organizational members exchange knowledge(including tacit and explicit knowledge) with each other, thereby creating new knowledge. The limitations of this study are that data-based searches only originate from Scopus data and limit the relationship between knowledge sharing and innovation performance. **Conclusion:** Practically this research provides benefits regarding the relationship between Knowledge Sharing and Innovation Performance, which can assist business actors in developing their business. This can also be additional knowledge about which variables are of concern to complete the relationship between Knowledge Sharing and Innovation Performance.

Keywords: Innovation Performance, Knowledge Sharing and, VOSviewer

Sensitivity Analysis of EDAS Method in Determine Alternative PPA Scholarship Recipients

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Abstract

Background and Aims: Edas method is techniques and models of Multi Criteria Decision Making (MCDM) that produce results Finally form ranking. Application method in determine recipient scholarship already very lots however level accuracy still around 80%. whereas scholarship ideally given to the right student with consider a number of criteria . Scholarship Peningkatan Prestasi Akademik (PPA) is one effort government in promote education and educate child nations , many outstanding students in field academic and join compete get PPA scholarship so need For do selection with a number of criteria assessment . The purpose of study This is analyze sensitivity from EDAS method in determine recipient scholarship PPA. **Methods:** Test sensitivity done with see Candidate alternative that is fixed (stable) when done change weight in range -0.03 to 0.08. Criteria used in study This are GPA, Semester, Total Dependents, Electricity Meters, Parental Income, Achievement and Organization. Determination candidate alternative recipient quality scholarships chosen based on a number of most methods produce candidate stable alternative. **Results:** Based on 11 experiments change weight criteria , then obtained that The Edas methods there are 5 alternatives own ranking remains (stable) when changing the criteria weights with a range of -0.03 to 0.08. The range -0.03 to 0.04 the final results are still stable, compared to when in the range 0.05-0.08 the criteria are sensitive to change

Keywords: Edas, Sensitivity, SPK

The Effect of Digital Leadership on Green Human Resources Management Practice in Indonesian Digital Enterprises

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Abstract

Background and Aims: In the digital era towards the industrial revolution 5.0, digital enterprise in Indonesia face increasing challenges related to environmental sustainability. The integration of technology in leadership, known as digital leadership, can potentially influence sustainable human resource management (HRM) practices. In particular, digital leadership can influence the practice of green human resources management (GHRM), which focuses on managing human resources with care for the environment. This study aims to analyze the influence of digital leadership on the practice of GHRM in Indonesian digital enterprises. The focus is on identifying how digital leadership affects companies' efforts to implement environmentally friendly HR practices. **Methods:** This research uses a quantitative approach with a survey method for digital enterprises in Indonesia. The sample of this study was 120 people consisting of CEO and CTO/CIO of digital enterprises. Data collected by sending google form questionnaires via email. The data analysis method uses regression techniques with the help of the SmartPLS 4 application to test the effect of digital leadership on GHRM practices. **Results:** The results of the research show that there is a positive and significant effect between digital leadership and the practice of GHRM in Indonesian digital enterprises. Leadership that is strongly related to technology drives the use of sustainable HRM, such as increased environmental awareness and environmentally friendly HR practices. **Conclusions:** In a changing business

environment, digital enterprises in Indonesia need to consider digital leadership as an important tool to achieve sustainability, particularly through the implementation of GHRM. Leadership that combines technology and environmental awareness can guide companies towards socially and ecologically conscious HR practices, which in turn will bring long-term benefits to the company and the environment. Therefore, digital enterprises should integrate digital leadership as a core strategy in managing HR sustainability.

Keywords: Digital Leadership, Green HRM, Digital Enterprises

The Effect Of Financial Literacy and Financial Attitude on Financial Management Practices Among Management School Students

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Abstract

Background and Aims: financial management is an activity related to financial management activities to allocating funds, the activities financial literacy relate to how much a person understand financial management which is known as financial literacy, apart from that attitude towards behavior is the second aspect of financial management. This study aims to analyze the effect of financial literacy of financial attitude on financial management practices among management school students Universitas Sembilanbelas November Kolaka. **Methods:** the method used in this research in quantitative through a descriptive analysis approach. The population in this study were all management Universitas Sembilanbelas November kolaka students class of 2019-2020 totalling 225. Data collection used questionnaires with research samples from Universitas Sembilanbelas November Kolaka with the selection of samples using purposive sampling technique respondents who need the requirements and can be analyzed are 140. Testing research instruments used validity and reliability test with SPSS 22.0. The data analysis technique used in this study Structurall Equatuion Modelling (SEM) Based on Partial Least Square (PLS) using the Smart-PLS 4.0. **Results:** Based on the results, it is known that the financial literacy level category of Universitas Sembilanbelas November Kolaka Students for the 2019-2020 period was 3,56% lower than the financial attitude of 3,88% and the level of financial management practices of 3,25%,

which is in the medium category. The results of the analysis regarding financial literacy and financial attitude shown that both has a significant positive influence on financial management practices with a T- statistic value of 3.923 and P-value of 0,000 for financial Literacy and the financial attitude variable is positive with a T-statistic value of 4.074 an P-Value 0,000. **Conclusion:** The study implies that increasing financial literacy and improving ones financial attitude can impove personal financial management activity.

Keywords: Financial Literacy, Financial Attitude, Financial Management

The Effect of Human Resource Development on The Performance of Civil Servants at Manpower and Transmigration Office of Southeast Sulawesi Province

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Abstract

Background and Aims: This research was conducted with the aim of knowing and analyzing the influence of Human Resources development on the performance of Civil Servants at Manpower and Transmigration Office of Southeast Sulawesi Province.

Methods: This research uses quantitative methods. The population in this study were Civil Servants at Manpower and Transmigration Office of Southeast Sulawesi Province. The sample in this study were all Civil Servants at Manpower and Transmigration Office of Southeast Sulawesi Province, totaling 115 respondents. The data collection technique is by giving questionnaires to respondents. In proving and analyzing this, validity and reliability tests, simple linear regression tests and F tests (simultaneous) and t tests (partial) are used.

Results: Based on respondent data, there were 65 people aged 19-30 years and 50 people aged 31-50 years. The number of respondents with a high school education was 23 people, 86 people with a bachelor's degree, and 6 people with a postgraduate education. Based on the results of data analysis, Human Resource Development has a positive and significant effect on Employee Performance or it could be said that Human

Resource Development has a positive and significant effect on Employee Performance at the Manpower and Transmigration Office of Southeast Sulawesi Province with a calculated t value of 7,800 > t table 1.65845, and contributed 35% to the improvement of employee performance. **Conclusion:** The conclusion of this study is that Human Resource Development has a positive and significant effect on Employee Performance at Manpower and Transmigration Office of Southeast Sulawesi Province. The development of existing Human Resources needs to continue to be developed, especially in the training section to improve their respective performance so that employees are more motivated or more enthusiastic to work better in carrying out their duties.

Keywords: Human Resource Development, Performance

The Effect of Self Efficacy and Locus of Control on Career Maturity of USN Kolaka Nursing Students

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Abstract

Background and Aims: This study is motivated by the phenomenon that shows that not a few nursing students are not ready for a career because of their low career maturity, this is evidenced by the survey results which show that the low preparation or planning after completing their studies, they are also not fully confident in their competencies, some also claim to take nursing studies for reasons of parental demands, and follow friends, which are not in accordance with their desired interests. This study aims to analyze the effect of self-efficacy and locus of control on the career maturity of USN Kolaka nursing students. **Methods:** This research uses a quantitative method approach. The population in this study were nursing students of USN Kolaka class 2020-2022. While the sample of this study amounted to 128 people with the determination of the sample using the census technique. Data collection in this study was carried out by means of observation, documentation and questionnaires. Based on data analysis using Structural Equation Modelling (SEM) based on Partial Least Square (PLS). **Results:** the research results found that the self-efficacy variable has a positive and significant effect on the career maturity of nursing students which is indicated by a t-statistic value of 9,610 and a p-value of 0.000. while the locus of control variable has a positive and significant effect on the career maturity of nursing students which is indicated by a t-statistic value of 1,693 and a p-value of 0.047. **Conclusion:** So based on this, it can be concluded that the self-efficacy variable has a greater

contribution than the locus of control variable in predicting the career maturity of nursing students.

Keywords: Self Efficacy, Locus Of Control, and Career Maturity

The Effect of Training and Compensation on the Performance of Agricultural and Animal Husbandry Officer in Kolaka Regency

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Abstract

Background and Aims: Based on the data obtained by the author, employees of the Kolaka Regency Plantation and Livestock Office in carrying out their duties cannot produce such good performance, due to the lack of training provided from the office so that employees cannot produce such optimal performance, then employees cannot produce such optimal performance because the available facilities are still inadequate so that employees cannot produce Performance is so optimal as targeted from the office. This study purposes to identify the effect of training and compensation on the performance of employees of the Plantation and Livestock Office of the Kolaka Regency, to determine the compensation for the performance of employees of the Kolaka District Plantation and Livestock Office. **Methods:** This study used an approach with quantitative methods, the population in this study was all employees of the Kolaka Regency Plantation and Livestock Office totalling 52 people, the sampling method used saturated samples, testing research instruments using validity tests and reliability tests with SPSS.26, data collection techniques in this study using literature studies, observation, distribution of questionnaires and documentation , data analysis techniques used in This research is a test of the Measurement (Outer Model) 4.0 model test. **Results:** Based on the results of the study, it is known that there is a

positive and significant influence between training variables on employee performance which is shown by a t-statistic value of 0.573 with a P-Value of 0.000. While the compensation variable has a positive and significant effect on employee performance shown by the t-statistic value of 0.306 with a P-Value of 0.008. **Conclusion:** The conclusion of this study is that there is a positive and significant influence between Training variables on Employee Performance. There is a positive and significant influence between Compensation variables on Employee Performance.

Keywords: Compensation, Training, Performance

The Influence of Entrepreneurship Education and Entrepreneurship Orientation on Culture Moderated Interest in Entrepreneurship among a University Students

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Abstract

Background and Aims: Based on preliminary data obtained by the author with a total of 306 students. Students who are interested in entrepreneurship are 90 students, and those who are not interested in entrepreneurship are 216 students. It can be concluded that interest in entrepreneurship is low. The thing that causes a lack of interest in entrepreneurship among students USN Kolaka based on the explanation above is entrepreneurship education and entrepreneurial orientation. This study aims to determine the effect of entrepreneurship education, entrepreneurial orientation, and culture is a variable that can moderate entrepreneurial orientation towards Entrepreneurial Interests of USN Kolaka Students.

Methods: This research uses a quantitative method approach. Data collection in this study used documentation and distribution of questionnaires. The research instrument test used the validity test and reliability test with SPSS 24. The data analysis used in this study was the measurement model test (outer model) and structural model testing (inner model) with Smart PLS 40. **Results:** Based on the research results it is known that there is a positive and significant influence between the variables of entrepreneurship education on entrepreneurial interest as shown by the F-statistic value of 2.182 with a P-Value of 0.015 While the

entrepreneurial orientation variable has a positive and significant effect on entrepreneurial interest indicated by a t-statistic value of 4.318 with a P-Value of 0.000. For cultural moderation, it weakens the influence of entrepreneurship education on entrepreneurial interest with a t-statistic value of 0.967 with a P-Value of 0.167, while cultural moderation weakens the effect of entrepreneurial orientation on entrepreneurial interest, with a t-statistic value of 1.069 with a P-Value of 0.143. The conclusion of this research is that there is a positive and significant influence between Entrepreneurship Education variable on the Entrepreneurial Interest of USN Kolaka Students. There is a positive and significant influence between the Entrepreneurial Orientation variable on the Entrepreneurial Interest of USN Kolaka Students. **Conclusion:** Culture weakens the influence of Entrepreneurship Education on the Entrepreneurial Interest of USN Kolaka Students. Culture weakens the influence of Entrepreneurial Orientation on Student Entrepreneurial Interest.

Keywords: Entrepreneurship Education, Entrepreneurship Orientation, Interest in Entrepreneurship, Culture

The Influence of Investment Knowledge and Pocket Money on Investment Intention in Mutual Funds

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Abstract

Background and Aims: Investment is the activity of setting aside funds that are owned to be invested in investment products that are expected to provide financial benefits. Students are currently in a transition period towards working life where they will be required to manage their finance independently. Students are required to learn to manage their finances independently. Individuals who have financial knowledge can organize their personal financial planning so that the individual can maximize the time value of money and improve their standard of living. This study aims to determine the Influence of Investment Knowledge and Pocket Money on the Investment Intention of USN Kolaka students. **Methods:** This study used quantitative methods. Collecting data in this study used observation, literature study and distributing questionnaires. The population of this study were all FISIP USN Kolaka students class of 2019-2020 in the Management, Accounting and Development Economics study program. Determination of sample size used the slovin formula, amounting to 222 with the purposive sampling technique. Testing research instruments used validity and reliability tests with SPSS 22.0. The data analysis technique used in this study was Structural Equation Modelling (SEM) based on Partial Least Square (PLS) with measurement model testing (outer model), structural model testing (inner model) and second order with Smart PLS 4.0. **Results:** Based on the result of the study that there was a significant influence between Investment Knowledge and Investment Intention, this indicated by a P-Value of 0.000. Likewise with Pocket Money there

was an influence but not significant on Investment Intention, this indicated by the P-Value of 0.350. **Conclusion:** The pocket money variable does not have a significant influence on investment intention because the predominance of student pocket money is less than IDR 500.000 and expenditure is only focused on main needs and college needs and students' personal financial management is still poor. So that students who have an interest in investing have not yet decided to invest.

Keywords: Investment Intention, Investment Knowledge, Pocket Money

The Influence of the Principal's Leadership Style on School Effectiveness

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Abstract

Background and Aims: The integrity of a leader greatly influences the quality of a person's leadership. With good integrity, a leader, in this case the school principal, will be obeyed and respected by the teachers and students he leads, so that an orderly and conducive school organizational environment can be created. Continuous classroom supervision is very important to maintain the quality of teaching and learning activities in the school. When the process is felt to be not in accordance with standards, the principal, teachers and teaching staff at the school will work together to make improvements so that the quality of service to students will run optimally. **Methods:** This is a quantitative study using primary data and secondary data sources: There are three type informant in research This that is informant key, informant expert (main), and informant incidental (supporting). The techniques for data collection were literature study, observation, interviews, and documentation. The techniques for data collection were literature study, observation, interviews, and documentation. All data that have been collected was analyzed by reducing, presenting, and concluding techniques. **Result:** Leadership is a person's ability to direct other people to achieve predetermined goals. The principal's leadership can influence the performance of his subordinates. The principal's leadership will be accepted if the leadership applied is very suitable and liked. Social influence policies with teachers and students, and actions in making various policies will have an impact on the effectiveness of the school. **Conclusions:** The principal's leadership in the school organization

as a system will influence the effectiveness of his subordinates, and it is also said that the better the principal's leadership, the better the subordinates' performance in carrying out their respective duties.

Keywords: Leadership style, Headmaster

The Performance of the Technical Implementation Unit of the Training and Skill Development Center (UPTD BLKK) in Creating Skilled Labor in Kolaka Regency

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Abstract

Background and Aims: The aim of this research is to explore and describe the performance of UPTD BLKK Kolaka in generating skilled labor in Kolaka Regency. **Methods:** This research adopts a qualitative descriptive approach, employing Data Reduction, Data Presentation, and Drawing Conclusions to provide a comprehensive overview of the core issues under examination, particularly concerning the performance of UPTD BLKK Kolaka in producing skilled labor. Data is collected through direct observation and in-person interviews. **Results:** The research findings reveal that the infrastructure at UPT BLK Kolaka, such as training facilities, is suboptimal due to damage incurred over time, exacerbated by UPTD BLK's dependence on budget allocations from the central government. Furthermore, the number of instructors in BLK is insufficient to adequately teach the numerous training participants. The determination of instructor quantity is influenced by both the budget provided to BLK and the independently devised training packages by UPTD BLK Kolaka. **Conclusion:** In conclusion, the study highlights the challenges faced by UPTD BLKK Kolaka in creating skilled labor, primarily related to infrastructure issues and the availability of instructors.

The infrastructure concerns need to be addressed to ensure optimal training conditions. Additionally, securing adequate instructor resources is crucial to effectively deliver training programs. These insights provide a foundation for potential improvements in the performance of UPTD BLKK Kolaka to better serve the goal of producing skilled labor in Kolaka Regency.

Keywords: Performance, UPTD, BLK Kolaka.

The Role of Intellectual Property Rights in The Sustainable Development of Tourism Villages in Coastal Areas

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Abstract

Background and Aims: The Indonesian government, through the Ministry of Tourism, has launched a tourism village program. Through this program, the government hopes that creative villages will emerge that are able to utilize the potential of their villages through natural tourism and cultural tourism. One of the potentials of tourist villages that can be used as added value to the village economy is selling souvenirs, but this is still limited by business capital. The aim of this research is to examine the role of intellectual property rights registration for tourist village communities in coastal areas through empowering MSMEs in each village. **Methods:** The research method used in this research is empirical normative legal research which emphasizes secondary data, the sampling technique uses a purposive sampling method, namely pointing to tourist villages in coastal areas in Kolaka district and data management is carried out descriptively-prescriptively on research subjects and objects. **Results:** Based on research results, it was found that tourist village communities in coastal areas do not yet have knowledge regarding procedures for comparing processed products and registering intellectual property rights for products sold, tourist village communities are only focused on providing access to tourist and cultural facilities, this is influenced by community ignorance regarding the benefits of registering products at an intellectual property center which can be used as collateral to obtain business capital from financial institutions and other problems, the lack of effective socialization

of the implementation of regulations related to intellectual property rights. **Conclusion:** With the implementation of government regulations regarding the creative economy, strengthening the status of ownership of intellectual property rights as an object of guarantee, this must be utilized by tourist village communities as a source of additional business capital.

Keywords: Intellectual Property Rights, Tourism Village

Web-based Implementation of the Multi Attribute Utility Theory in Decision Support System for Government Aid Recipients

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Abstract

Background and Aims: The government always strives to improve community welfare through sharing government aid programs. But, the large number of people who apply this aid while the quota of aid provided by the government is limited. Therefore, this research determines the criteria for people who are entitled to receive government aid based on the Regulation of the Minister of Social Affairs of the Republic of Indonesia Number 1 of 2018 article 5. The criteria consist of health, education and welfare. Each criterion has sub-criteria. This research aims to help decision makers to determine which communities are entitled to receive government aid. **Methods:** The method used in this research is Multi Attribute Utility Theory. We used 3 criteria, consist of health, education and welfare. Health sub-criteria include maternal gestational age, breastfeeding mothers and toddlers aged 0-5 years. Education sub-criteria include education levels from elementary school to university. And welfare sub-criteria include productive age (30-70 years), elderly age (above 70 years) and disability. We used data collection techniques from observations and interviews in one of the villages in Bombana Regency. We used a sample of 35 families as proponents of government aid as the alternative data. Apart from that, we also conducted a literature study related to this research. We use structured design for system design, and the PHP programming language for implementation. For data storage we use MySQL database management system. **Results:** This

research produces a web-based decision support system (DSS) for determining recipients of government aid using the Multi Attribute Utility Theory. **Conclusion:** Based on the results of research that has been carried out, it can be concluded that among the 35 families that were proposed, based on the results of trials/comparison between conventional and system, there are 48% who are eligible for government aid.

Keywords: DSS, Multi Attribute Utility Theory, government aid

Web-Based Tax Monitoring Information System at Regional Revenue Agency in Kolaka Regency

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Abstract


Background and Aims: Monitoring is an activity carried out by leaders to see, monitor the running of the organization during activities, and assess the achievement of goals, see supporting factors and obstacles to program implementation. Taxes are people's contributions to the state treasury based on law (which can be enforced) without receiving reciprocal services (counter performance) which can be directly demonstrated, and which are used to pay for public expenses. The Regional Revenue Agency (BAPENDA) is an implementing element of regional autonomy in the field of regional revenue in Kolaka Regency, which in its activities carries out tax data management in a semi-computerized manner and not yet online so that the billing staff does not know which parties have made tax payments or which have not. This research aims to design a tax monitoring information system so that it can monitor tax payments, monitor the progress of tax payments, and help check tax payments. **Methods:** This tax monitoring information system was designed using the Prototype method with process details, namely, system requirements analysis, database design, prototyping design, prototyping evaluation, system coding, system testing, system evaluation, system use. Designing tables in the database using ERD. **Results:**

The results of this research show that with this web-based tax monitoring information system, billing staff can easily monitor tax objects that have paid tax and those that have not. Apart from that, this information system is very helpful for the head of the billing department in monitoring tax payments and knowing tax developments in graphic form. **Conclusion:** Taxpayers can also see the tax payments they have paid. For future system development, online payment features can be added to make it easier for taxpayers to carry out their tax payment transactions quickly and easily.

Keywords: Information System, Prototype, Regional Revenue Agency, Tax Monitoring

Section Poster

Analysis of Chemical Compounds and Antimicrobial Activity of Patchouli Oil (*Pogostemon cablin* (Blanco) Benth. From North Kolaka, Indonesia




ANALYSIS OF CHEMICAL COMPOUNDS AND ANTIMICROBIAL ACTIVITY OF PATCHOULI OIL (*Pogostemon cablin* (Blanco) Benth.) FROM NORTH KOLAKA, INDONESIA

Hakim W. Sabandar, CW. Kamaruddin HS

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Background




Patchouli is a type of plant that contains essential oils which have important economic value and is one of Indonesia's main oil and gas export commodities (1). Patchouli oil production in Indonesia: 70-90 % (2).

The main compound that makes up patchouli oil is patchouli alcohol (82.60 %) (3). Patchouli is traditionally used as: sweet odor (removal, wound, ulcers), diarrhea medicine and hair cleanser (4).


Scientific studies related to patchouli oil in North Kolaka Regency are still lacking. This study aimed to determine the chemical compounds contained in patchouli oil (*P. cablin*) and antimicrobial activity against *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans*.

Methods



Results


Distillation Results



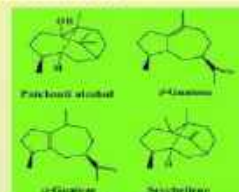
Volume of 3.2 mL
Yield of 1.7 %

Composition of Chemical Compounds of Patchouli Oil

Major Compound of Patchouli Oil



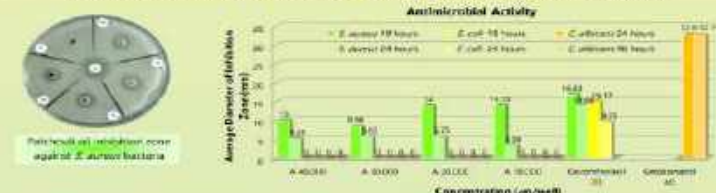
Compound Name	% Area
Patchouli alcohol	82.60
E-Cubane	13.0
α-Cubane	9.9
Terpinolene	4.4



Structures of major compounds of patchouli oil from North Kolaka Regency

Antimicrobial Activity of Patchouli Oil against *S. aureus*, *E. coli*, and *C. albicans*

Antimicrobial Activity



Patchouli oil inhibition zone against *S. aureus* bacteria

Concentration (µg/mL)	<i>S. aureus</i> 18 hours	<i>S. aureus</i> 24 hours	<i>E. coli</i> 18 hours	<i>E. coli</i> 24 hours	<i>C. albicans</i> 24 hours	<i>C. albicans</i> 48 hours
A 40000	12	10	10	10	10	10
A 80000	18	16	16	16	16	16
A 160000	24	22	22	22	22	22
A 320000	30	28	28	28	28	28
Control (M)	36	34	34	34	34	34

Conclusion


Patchouli oil from North Kolaka Regency has 6 major chemical compounds which have the potential as antibacterial agent against *S. aureus*.

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Analysis of the Design a Mobile Community HealthCenter Ship for Health Services in Southeast Sulawesi Waters Using a Catamaran Hull

TITLE: ANALISIS PERANCANGAN KAPAL KESEHATAN KOMUNITAS
 PENYUSUN: ...



ANALYSIS DESIGN OF A COMMUNITY HEALTH CENTER SHIP FOR COASTAL COMMUNITY HEALTH SERVICES IN BUTON REGENCY USING A CATAMARAN HULL

Samaluddin, Azhar Aras Mubarak, Rahmawati Djunola, Laode Abdul Fajar Hasidu
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BACKGROUND

POOR HEALTH SERVICES ON THE OUTER ISLANDS

↓

THE DIFFICULTY OF ACCESSING HEALTH BY LAND ROUTE

↓

DESIGN A HEALTH CENTER SHIP THAT CAN OPERATE WELL AND BASED THE NEEDS OF THE LOCAL COMMUNITY

METHOD

SHIP DESIGN ACCORDING TO NEEDS USING AUTOCAD SOFTWARE

↓

SHIP RESISTANCE CALCULATION USING MAXSURF SOFTWARE

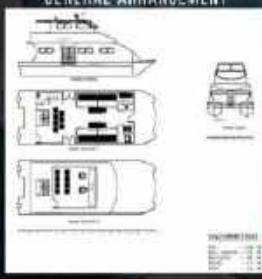
↓

DETERMINE THE SHIP'S ENGINE POWER ACCORDING TO NEEDS

↓

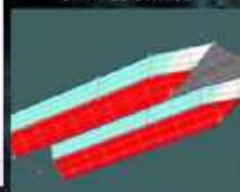
ANALYSIS OF SHIP NEEDS AND FACILITIES

GENERAL ARRANGEMENT

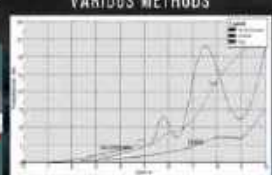


RESULT

SHIP MODELING USING MAXSURF SOFTWARE AND CALCULATING SHIP RESISTANCE



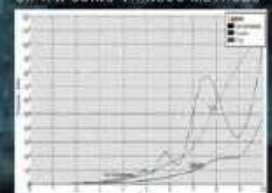
COMPARISON GRAPH OF RESISTANCE TO SPEED FOR VARIOUS METHODS



CONCLUSIONS

THE OVERALL LENGTH OF THE SHIP IS 16 M, THE WIDTH OF THE SHIP IS 6 M, THE WIDTH OF THE HULL IS 3,2 M, THE HEIGHT OF THE SHIP IS 1,25 M, THE DRAFT OF THE SHIP 0,75M WHICH IS DESIGNED TO BE EQUIPPED WITH 4 PATIENT BEDS, DOCTOR'S TABLE, NURSE'S TABLE, WAITING CHAIR, TOILET AND MULTI-PURPOSE STORAGE. THE ENGINE POWER USED IS 15 HP WHICH IS USED FOR PATIENT MOBILIZATION, SOCIAL ACTIVITIES, FIRST AID (FIRST AID FOR ACCIDENTS) AND SAR (SEARCH AND RESCUE) FUNCTIONS. THE ENGINE POWER USED IS 15 HP WITH MANUFACTURING COSTS REACHING RP 1.329.645.000,00.

POWER AND SPEED COMPARISON GRAPH USING VARIOUS METHODS



(1) ABDULLAH N. MASRUDDIN & A. AYIANKA R. K. EFFENDI. HOSPITAL SHIP DESIGN FOR PUBLIC HEALTH SERVICE IN THE FOREMOST, OUTERMOST, AND REMOTE (FORD) AREAS IN INDONESIA. MARITIME SAFETY INTERNATIONAL CONFERENCE. 2020. DOI:10.1006/1751-7715(2020)11:01(20)11

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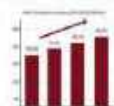
Analysis Of The Marketing Strategy Of Micro, Small And Medium Enterprises

ANALYSIS OF THE MARKETING STRATEGY OF MICRO, SMALL AND MEDIUM ENTERPRISES

"High-Medium Association Development"
 Lembaga Penelitian dan Pengabdian Masyarakat
 Jalan Tugu, No. 10, Medan, Sumatera Utara

No. 46.83.24.01
 Email: ecom@lapm.com

BACKGROUND AND RESEARCH OBJECTIVE



The problem faced by MSMEs in Indonesia is a lack of insight about marketing. Caused by the limited information that can be reached by MSMEs regarding the market surrounding to do more education and innovation. The research design carried out by MSMEs must type a marketing strategy to deal with competition because MSMEs in Indonesia, MSMEs have an important role in a firm to develop and grow the country's economy because they are able to absorb labor (labor) so that they play a role in reducing the unemployment rate. The purpose of this research is to determine marketing strategies for MSMEs in Medan to the future.

RESULT


• Internal Factor Analysis Summary (IFAS)

No.	Statement	W	SW	OW	WO
1	Manajemen SDM	1	1	1	1
2	Manajemen Keuangan	1	1	1	1
3	Manajemen Pemasaran	1	1	1	1
4	Manajemen Teknologi	1	1	1	1
5	Manajemen Inovasi	1	1	1	1
6	Manajemen Riset dan Pengembangan	1	1	1	1
7	Manajemen Hubungan Masyarakat	1	1	1	1
8	Manajemen Legalitas	1	1	1	1
9	Manajemen Lingkungan	1	1	1	1
10	Manajemen Sistem	1	1	1	1
11	Manajemen Kualitas	1	1	1	1
12	Manajemen Keberlanjutan	1	1	1	1
13	Manajemen Digitalisasi	1	1	1	1
14	Manajemen Keberagaman	1	1	1	1
15	Manajemen Keberlanjutan	1	1	1	1
16	Manajemen Keberlanjutan	1	1	1	1
17	Manajemen Keberlanjutan	1	1	1	1
18	Manajemen Keberlanjutan	1	1	1	1
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42	Manajemen Keberlanjutan	1	1	1	1
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44	Manajemen Keberlanjutan	1	1	1	1
45	Manajemen Keberlanjutan	1	1	1	1
46	Manajemen Keberlanjutan	1	1	1	1
47	Manajemen Keberlanjutan	1	1	1	1
48	Manajemen Keberlanjutan	1	1	1	1
49	Manajemen Keberlanjutan	1	1	1	1
50	Manajemen Keberlanjutan	1	1	1	1

• External Factor Analysis Summary (EFAS)

No.	Statement	W	SO	WO	ST
1	Keberhasilan pasar	1	1	1	1
2	Keberhasilan pasar	1	1	1	1
3	Keberhasilan pasar	1	1	1	1
4	Keberhasilan pasar	1	1	1	1
5	Keberhasilan pasar	1	1	1	1
6	Keberhasilan pasar	1	1	1	1
7	Keberhasilan pasar	1	1	1	1
8	Keberhasilan pasar	1	1	1	1
9	Keberhasilan pasar	1	1	1	1
10	Keberhasilan pasar	1	1	1	1
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16	Keberhasilan pasar	1	1	1	1
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22	Keberhasilan pasar	1	1	1	1
23	Keberhasilan pasar	1	1	1	1
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36	Keberhasilan pasar	1	1	1	1
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40	Keberhasilan pasar	1	1	1	1
41	Keberhasilan pasar	1	1	1	1
42	Keberhasilan pasar	1	1	1	1
43	Keberhasilan pasar	1	1	1	1
44	Keberhasilan pasar	1	1	1	1
45	Keberhasilan pasar	1	1	1	1
46	Keberhasilan pasar	1	1	1	1
47	Keberhasilan pasar	1	1	1	1
48	Keberhasilan pasar	1	1	1	1
49	Keberhasilan pasar	1	1	1	1
50	Keberhasilan pasar	1	1	1	1

• Market Growth Strategy



• Market (STP)

Segment	Target	Position
1. Segmen 1	Target 1	Position 1
2. Segmen 2	Target 2	Position 2
3. Segmen 3	Target 3	Position 3
4. Segmen 4	Target 4	Position 4

Based on the results of the STP system above, there are several strategies which are then formulated into marketing strategy that have been discussed with alternative strategies based on the study value of investment and cost/benefit of the business.

MSME marketing strategy:
 The importance of these strategies are as follows:
 1. SO Strategy - Strategy I
 2. WO Strategy - Strategy II
 3. ST Strategy - Strategy III
 4. WT Strategy - Strategy IV

METHOD

The research is a field research conducted at GUM Visioka with a qualitative research approach. The data is taken through word of mouth through company, SWOT analysis, primary data, STP Matrix, Growth Strategy Matrix, Porter's Generic Strategy and Research Form that can be used with a questionnaire.

CONCLUSION

To increase sales and revenue, the strategy that can be implemented are as follows:


1. Strategy I: Market reduction, development, promotion, product innovation and price reduction or additional.
2. Strategy II: Improve the Quality and Costing.
3. Strategy III: Increase of stock price or provide new price.
4. Strategy IV: Improve Product Quality.

Analysis of Phytochemical Compounds and Antioxidant Assay Of Dichloromethane Extract From Pacikala Seeds (*Etilingera Elatior* (Jack) R.M.Smith) From North Kolaka Regency

Email: salfadhamac@id

Analysis of Phytochemical Compounds and Antioxidant Assay Of Dichloromethane Extract From Pacikala Seeds (*Etilingera Elatior* (Jack) R.M.Smith) From North Kolaka Regency
Anap MA, Sabandar Cdk, Wahyuningrum B
Department of Pharmacy, Faculty of Science and Technology, University Sebelas Maret, November Kolaka, South Sulawesi, Indonesia

Background



Chlorogenic acid, polyphenols, saponins, tannins, flavonoids, steroids, alkaloids, glycosides, terpenoids and essential oils (1,2).

- Soye throat
- Cooking spices
- E. elatior* seeds
- Chemical content
- Biological activity

Method


- Sample extraction
- Phytochemical screening
- Antioxidant test (DPPH)
- UV-Vis spectrophotometric antioxidant test

Objective

- To analyze the phytochemical compounds contained in the dichloromethane extract of *E. elatior* seeds
- To test the antioxidant activity of dichloromethane extract of *E. elatior* seeds

Results and Discussion

1. Extract



Dichloromethane extract of *E. elatior* seeds


2. Phytochemicals

Dichloromethane extract from *E. elatior* seeds qualitatively contains:


Alkaloids	Terpenoids
Steroin	Steroids
Flavonoids	Saponin

3. Qualitative antioxidant

Dichloromethane extract of *E. elatior* seeds




Ascorbic acid



Dichloromethane extract of *E. elatior* seeds has antioxidant activity as seen from the formation of paleish white zone on a purple background

4. Quantitative antioxidant



Maximal
Dichloromethane: 0.022
Ascorbic acid: 0.023

Dichloromethane extract of *E. elatior* seeds has antioxidant activity against scavenging DPPH free radicals.

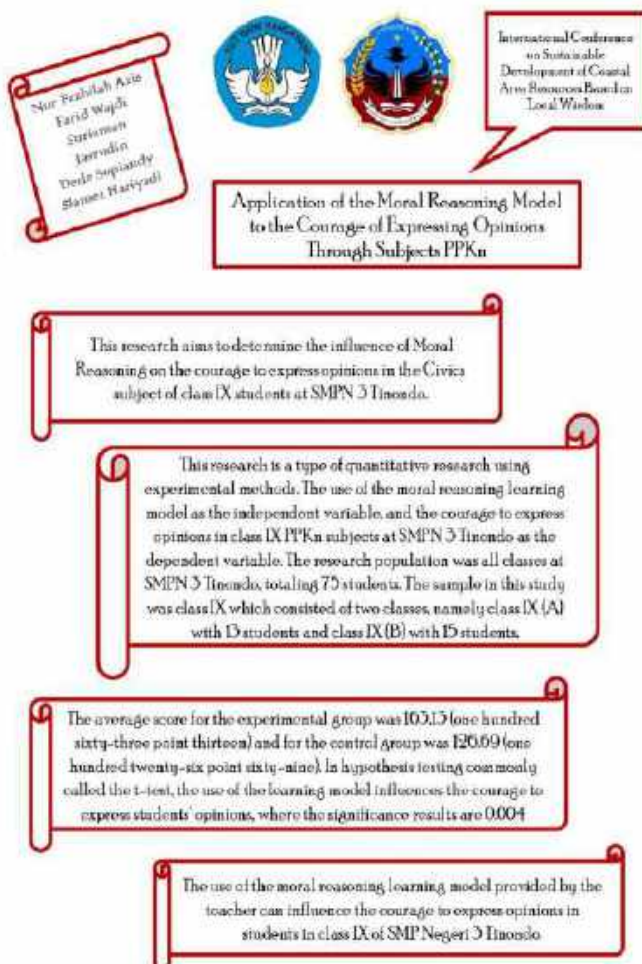
Conclusion

The dichloromethane extract of *E. elatior* seeds was detected to contain terpenoid compounds and has the potential to be a source of antioxidant compounds

Bibliography

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- Pulni, H.S. 2021. *Etilingera elatior* sebagai antimikroorganisme pada penderita diabetes mellitus. *Jurnal Penelitian Perawat Profesional* 3(1): 130-138.

Application of the Moral Reasoning Model to the Courage of Expressing Opinions Through Subjects PPKn



Email: faridwajdi@upi.com
Farid Wajdi 901248902998

Biomass Waste into Hydrogen and CNTs for Sustainable Renewable Energy by Microwave Irradiation

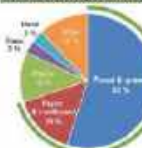
INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT OF COMPOSITE MATERIALS AND BIOLOGICAL COMPOSITES
 30-31 October, 2023, Nanyang Technological University, Singapore

Biomass Waste into Hydrogen and CNTs for Sustainable Renewable Energy by Microwave Irradiation
 Kohji Higashigaki¹, Futoshi Akita², Kazuo³, Ai Isobe⁴, Masahiro⁵, Yoko Kageyama⁶, Takayuki Asano⁷,
 Toshihiko Nishikubo⁸, Fumihiko Nishimura⁹, Yoshiochi Tatematsu¹⁰ and Seisaku Mizuno¹¹
¹Research Center for Development of High-Tech Region, University of Fukui, Fukui 910-0007, Japan
²Department of Applied Physics, University of Fukui, Fukui 910-0007, Japan
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Biomass is the most abundant renewable resource and has a low environmental impact, so it allows to convert it into a sustainable energy source that can replace fossil fuels. It has been attracting attention in recent years. In particular, cellulose gasification is an efficient method that converts cellulose into hydrogen and produces highly valuable nanoparticle materials. However, it is difficult to control gasification temperature and reaction processing time, and the resulting hydrogen gas contains impurities such as CO and CO₂. In this study, we propose a method for easily and stably obtaining high-purity hydrogen gas and high-value-added nanocarbon materials from a mixture of cellulose and iron-based catalysts using microwave irradiation. As a result, cellulose was successfully converted to hydrogen-based syngas and carbon-containing residues. From the Raman spectra measurement, the residue after cellulose heating showed a Raman D/G ratio (ID/IG) peak in the low wavenumber region, suggesting that it is a Single-Wall Carbon Nanotube (SWCNT).

1. Background and Aims

Waste Composition in East Asia and Pacific



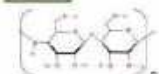
- Sp-called biomass waste accounts for 60% of the total
- ~70% of waste is disposed of as-is in dumping or landfills
- Cleaner disposal methods for biomass waste are needed for a sustainable society

First, Focus on cellulose

Biomass waste

WHAT IS WASTE? (THE WORLD BANK)

Cellulose



- Polymer compound represented by (C₆H₁₀O₅)_n

The main component of plant cell walls and the most carbohydrates in the world

High crystallinity makes it difficult to decompose (difficult to convert into useful materials)

Gasification of cellulose-containing biomass



Gasification of plastics by microwave heating



Microwave heating enables the production of high-purity hydrogen gas and functional nanocarbon materials from plastic more conveniently than conventional methods.

Aims of the present study

Investigation of gasification of cellulose, the main component of biomass, for conversion into useful materials using microwave heating

2. Methods

2.45 GHz multimode microwave heating System



Capable of Operating Under output and temperature control.

- Iron-based catalytic synthesis by sol-gel method
- Decomposition target

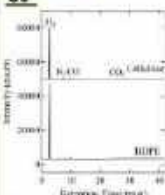


Kiri Wipe
Made of pulp

- Characterization Gas chromatography (GC) Raman microscopy Scanning Electron Microscopy (SEM)

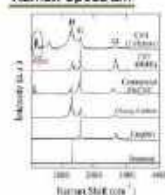
3. Results

GC



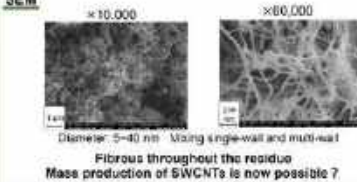
- Similarly to HDPE results, it produces a large amount of H₂ gas
- C₂H₄, which is produced by GC in the conventional method, is almost not produced
- Successful decomposition of cellulose by microwave irradiation

Raman Spectrum



- Raman D/G ratio (ID/IG) peaks unique to Single-Wall Carbon Nanotubes were confirmed in cellulose residue
- The possibility that SWCNTs were generated

SEM



Mass production of SWCNTs is now possible?

4. Conclusions

- Successful production of hydrogen gas by microwave irradiation of cellulose decomposition.
- The Raman spectra of the residual material show the RRM peak, indicating SWCNT deposition.
- SEM image shows that CNTs are formed over the entire residue.
- We found the possibility to synthesize SWCNTs easily and in large quantities.
- Microwave heating of various biomass will be tried in the future.

Breakwater Planning Karae Village Coastal Area, Buton Selatan District, South East Sulawesi



BREAK WATER PLANNING KARAE VILLAGE COASTAL AREA, BUTON SELATAN DISTRICT, SOUTHEAST SULAWESI

PERENCANAAN PEMERANG GELOMBANG BAYANITA KARAE
KABUPATEN BUTON SELATAN PROVINSI SULAWESI TENGGARA

Background / Latar Belakang

-  The occurrence of shallowing or sedimentation of beaches caused by excessive exploitation of local communities
-  Potential for abrasion caused by wave runoff which results in damage to residents' homes
-  The waves, which continue to increase every year, were recorded at the end of 2022 with wave heights reaching 4 meters.
-  Damage to the coastal security structure (talud) previously built by the local government

Methods / Metode



Purposes / Tujuan

Knowing the planned wave height and the type of breakwater that is suitable for the coastal area of Karae Village as well as taking into consideration the related parties as a means of solving issues that arise on the coast of Karae Village



Existing Condition of Karae Village Beach



Karae Village Breakwater Planning Design



The Protective Layer Stone when the equipment of the Protective Wall



Type of the most natural and cheap Breakwater

Discussion / Pembahasan

From the research results it was obtained: highest water level (RHWL) = 2.20 m, lowest water level (LWL) = 0.28 m, average water level = 1.42 m. The dimensions of the breakwater structure are stability of the Protective Layer Stone for first layer = 320 kg, second layer = 22 kg, and third layer = 2 kg. The top width of the first layer = 2 m, the second layer = 0.80 m, and the third layer = 0.31 m. The thickness of the protective layer for the first layer = 1.14 meters with a number of protective stones of 143 pieces, second layer = 0.53 meters with a number of protective stones of 275 pieces, and third layer corresponds to a number of protective stones of 1,748 pieces.




Sea Level Tide Measurements

Conclusion / Kesimpulan

The type of breakwater that is suitable for the waters of Karae Village after analyzing environmental data is the inclined type with a peak elevation of 3.41 meters and a breakwater height of 1.41 dpt.

RESEARCHER :
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 Sulyan (College Student)

Characterization of Cypress Essential Oil Extracted by Eco-friendly Microwave Vacuum Distillation Method



UNIVERSITY OF FUKUI

Characterization of Cypress Essential Oil Extracted by Eco-friendly Microwave Vacuum Distillation Method

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Abstract

In recent years, the microwave distillation method has attracted attention because the components in this essential oil extracted from plants are different from the conventional extraction method. In addition, as an initiative that contributes to the realization of a sustainable society, research on the effective use of natural forest resources is underway. Previous studies have suggested that microwave vacuum distillation can extract essential oils faster than conventional distillation methods and is advantageous for obtaining substances with heavy molecular weights. In this study, we focused on cypress from Fukui Prefecture and compared microwave vacuum distillation. The extraction conditions of the cypress essential oils were optimized by changing the pressure, microwave power, and microwave method methods such as continuously or intermittently. The essential oil content of 413.076 had a stronger aroma than that obtained at 813 Hz. Furthermore, compositional analysis of essential oils obtained using GC-MS showed, for example, that sesquiterpene peaks were detected in trace amounts, amounts that are not observed in conventional heating. In this presentation, we discuss the results of chemical composition analysis and experimental results under other conditions.

1. Introduction

Objective

Our laboratory is conducting research on the application of microwave technology for the research of sustainable, climate and resource societies. The purpose of this study was to gain knowledge through the application of microwave heating technology for conservative through effective use of forest and agricultural resources, and the study focused on the following points:

- Investigation of the possibility of extracting essential oil of Hinoki species by microwave vacuum distillation.
- Comparison (continuous and intermittent) of microwave heating methods.
- Investigation of optimal conditions for extracting essential oils with strong aroma.

Essential Oil

Natural materials from which plant fragrance ingredients are extracted

- Effects on the environment (eco-friendly, climate and resource societies, etc.)
- Antibacterial, antifungal, antiviral, insect repellent, etc.

Vacuum Distillation Method

- Distillation Process

 - Solvent and solvent are heated to boiling
 - Coating of evaporated air components
 - Collected as liquid

Decompression eliminates heat-induced distortions and reduces deterioration of essential oils. → The higher the vacuum degree, the more the flavor is retained.

Features of Microwave Heating

- Internal heating
- Unusual conventional heating, it does not depend on heat convection and directly heats the material itself.
- Ingredients that cannot be extracted by normal heating can be extracted.
- GF has high explosive absorption.
- High thermal efficiency
- Can be heated in a short time
- Extension of Goals and Experimental Program

2. Experimental

Sample

- Raw materials: wood chips of Hinoki (Japanese Cypress)
- Preparation: Dried and ground
- Preparation: Dried and ground
- Preparation: Dried and ground

Chips of Hinoki cypress from Fukui Prefecture: 200 g
Distilled water: 500 g

Vacuum Distillation Method

Heating Method	413 Hz	813 Hz
Microwave Heating 400 W Constant	22	33
Microwave Heating 400 W Constant	41.3	74
Microwave Heating 400 W Constant	81.3	89
Microwave Heating 400 W Intermittent	41.3	89
Microwave Heating 1000 W Intermittent	41.3	89
Normal Heating	11	33
Normal Heating	41.3	73
Normal Heating	81.3	89

Reactor Six (Shielded) (Instrumentation Co., Ltd.)
Frequency: 3.45 GHz
Max. output: 1000 W

Component Analysis

GC-MS (Agilent Technologies Japan, Ltd.)
Analysis of essential oil components

3. Results and Discussion

Vacuum Distillation Method

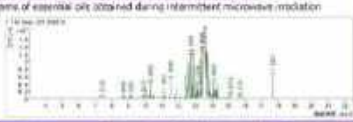
Heating Method	Pressure (mmHg)	Frequency (Hz)	Time (min)	Essential Oil (g)	Smell Intensity (1-5)
400 W Constant	81.3	413	Approx. 30 min	Aroma only (no smell)	1
	81.3	813	Approx. 2 min	1/4 (Distorted aroma as if you are taking a forest walk)	3
	81.3	813	Approx. 2 min	1/4 (Smell like burning wood)	4
1000 W Constant	81.3	413	Approx. 5 min	Aroma only (no smell)	1
	81.3	813	Approx. 5 min	Aroma only (no smell)	5

Smell Intensity: 5 is the strongest

- Essential oil extractable at 413 ~ 813 Hz
- The strongest essential oil aroma obtained when microwaves were applied intermittently at 1000 W
- Microwave heating took 1/4 of the time compared to normal heating until aromatic distilled water was identified

Compositional Analysis of Essential Oils by GC-MS

Characteristics of essential oils obtained during intermittent microwave irradiation with 1000 W



Compound	400 W Constant	400 W Intermittent	1000 W Intermittent
α-Pinene	41.3	7	44.81
β-Pinene	81.3	9	26.45
γ-Terpinene	81.3	5	16.54
1,8-Cineole	81.3	13	49.02
linalyl acetate	81.3	7	24.26
Normal Heating	81.3	3	24.86

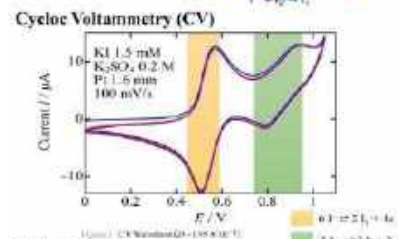
- Compared to normal heating, essential oils obtained by microwave heating have a higher number of components that differ from traditional values.
- Check that the features of microwave heating are the main components that differ from traditional values.
- We were able to identify many oil smells while stabilizing the size of temperature.
- The percentage of sesquiterpenes was about 1% and as high as microwave is heating compared to normal heating.
- Sesquiterpenes are easily attracted to microwave irradiation.

4. Conclusions

- Essential oil extracted from Hinoki cypress by microwave vacuum distillation method
- Compared to normal heating, the essential oils obtained by microwave heating had a higher number of components that differ from traditional values, and the percentage of sesquiterpenes was high.
- GC-MS component analysis of 1000 W intermittent irradiation showed that the main components that differ from traditional values are α-pinene, β-pinene, γ-terpinene, linalyl acetate, and 1,8-cineole.
- The microwave vacuum distillation method is an effective and efficient method.
- It was found that the microwave distillation method is more effective for the extraction of essential oils compared to conventional heating.
- In the future, we will perform component analysis and identify other natural materials that the microwave water which is subject to specific use in the future.

Charge-transfer and Mass-transport Mechanisms in the Iodine-Iodide Redox Reaction in Aqueous Solution

Charge-transfer and Mass-transport Mechanisms in the Iodine-Iodide Redox Reaction in Aqueous Solution
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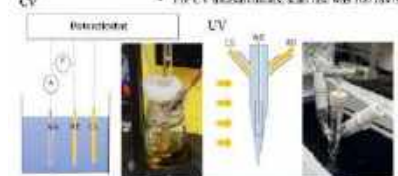


Motivation
 Iodine works efficiently in high concentrations.

- To perform electrochemical measurements of aqueous solutions containing iodine ions to clarify the relationship between ion concentration and redox current.
- To clarify the mechanism of charge transfer between iodine and iodide ions in aqueous solution when the concentration of KI is high.

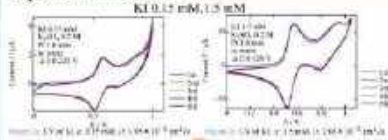
Electrochemistry

- Temperature (25 ± 1 °C)
- All solvents were initially degassed with N₂.
- For CV measurements, scan rate was 100 mV/s

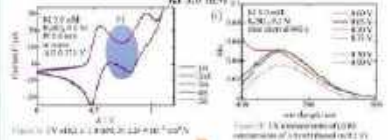


WE = Working electrode (7.0 mm Pt wire)
 CE = Pt wire
 RE = The reference electrode/recommended Ag/AgCl
 Mixed aqueous solution
 KI (0.15 mM, 1.5 mM, 3.0 mM, 150 mM)
 K₂S₂O₈ (0.2 M)

Experimental results



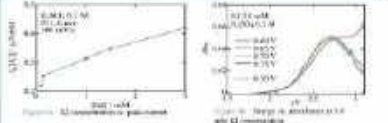
When KI concentrations were low, the second redox couple of I_2/I_3^- reaction becomes small.



UV measurement at the wavelength corresponding to I_2 showed a reaction at (1).

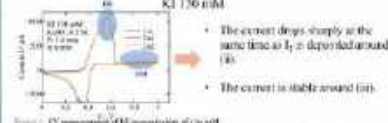
$$\Delta E = E_2 - E_1 = \frac{3RT}{2F} \ln \frac{[I_2]}{[I_3^-]}$$

F = Faraday Constant: (mol⁻¹)
 R = Gas constant: (J K⁻¹ mol⁻¹)
 T = temperature (K)



KI (mM)	ΔE (V)	R_p (mA)	$\ln \frac{[I_2]}{[I_3^-]}$	$\Delta E/R_p$ (V)	$\ln \frac{[I_2]}{[I_3^-]}$
0.15	0.221	3.17×10^{-5}	2.75	0.402	86
1.5	0.328	5.94×10^{-5}	2.68	0.589	201
3.0	0.371	1.51×10^{-4}	2.71	0.566	241

When KI concentration is high, I_2 is stable.



Conclusion

- I_2 does not exist stably at higher concentrations, and the I_2/I_3^- reaction was greater.
- When the concentration of KI increased, the current sharply decreased due to the deposition of I_2 on the electrode surface. However, following this initial drop, a stable current flow was observed.

Chemical Compound Characterization, Antioxidant, and Acute Toxicity of the 96% Ethanol Extract and Fractions of Balongga (Melothria scabra Naudin)

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Chemical Compound Characterization, Antioxidant, and Acute toxicity of the 96% Ethanol Extract and Fractions of Balongga (Melothria scabra Naudin)

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Background

Balongga plant — one of the local wisdom plants from Indonesia, Southeast Sulawesi.
Melothria scabra secondary metabolite content — flavonoids, tannin, saponin, carbohydrates, proteins, alkaloids, dan glycosides. Aktivitas biologis — antibakteris [3].
Balongga fruit — as a complement to food ingredients that have health benefits such as lowering blood pressure, mouth ulcers, and cholesterol [1,2] — study of scientific regarding balongga fruit is still in a nascent.

Objectives

- 1.To characterization the chemical compounds of 96% ethanol extract and organic fractions of balongga fruit.
- 2.To test the antioxidant activity of 96% ethanol extract and organic fractions of balongga fruit.
- 3.To evaluate the toxicity of 96% ethanol extract and organic fractions of balongga fruit.

Method

Sample *M. scabra* → Extract ethanol 96% (E-E) → Fractionation → Methanol fraction (M-F), Ethyl acetate fraction (E-A), n-hexane fraction (H-F).

Phytochemical screening → Spectrophotometric method of antioxidant testing → Acute toxicity testing.

A antioxidant testing using the *in vitro* DPPH scavange method.

Results

Chemical compounds

16 compounds were successfully identified from the ethanol extract of the fruits. For the first time there is O-1-ECF-oxymethylphenylamino-3-amoxyfraction (1), butyrate-2-AMMO (2), alkene (3), (4), (5), 3,6-Dihydroxyphenylacetone-5,11,13-tri-oxo-12-oxo acid (6), cucurbitacin (7-2-Ox-1-oxo-oxymethyl-β-D-glucopyranoside (8), and 2-hydroxy-3-(2-oxo-1-oxo-oxymethyl-β-D-glucopyranoside (9).

Quantitative antioxidant

The 96% ethanol extract, methanol fraction, and ethyl acetate fraction from balongga fruits have the potential to capture DPPH free radicals as indicated.

Acute Toxicity test Brine Shrimp Lethally Test (BSLT) method

LC50 (µg/ml):

Ethanol extract 96% — 1750.04
Methanol fraction — 4643.30
Ethyl acetate fraction — 94.07
n-hexane fraction — 1803.23
Methanol fraction — 10.5

BSLT method

The 96% ethanol extract, methanol fraction, and n-hexane fraction showed no toxicity, while the ethyl acetate fraction showed toxicity from balongga fruit when compared with potassium dichromate as a positive control.

Conclusion

Balongga fruit can be developed as a nutraceutical and pharmaceutical raw material, characterized by its strong antioxidant activity and does not show consumption.

Reference

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Community Structure and Carbon Stock of Mangrove Ecosystem of Simuang Island, Tiworo Archipelago

Community Structure and Carbon Stock of Mangrove Ecosystem of Simuang Island, Tiworo Archipelago

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BACKGROUND & AIMS


Simuang Island is one of the small islands in the Tiworo Archipelago that have high enough mangrove potential.

Community mangrove ecosystem have an ecological role to reduce the global climate change impact (Sharma et al. 2020; Adawo et al. 2017; Indiyanti et al. 2021; Phan et al. 2019)

Unfortunately, the study of the condition status of the mangrove community and its carbon stock is still limited.

METHODS

Aug-Sept 2023
Simuang Island, Tiworo Archipelago

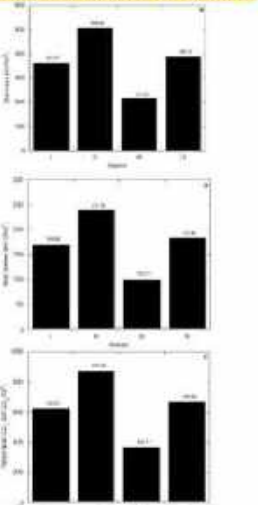


RESULTS

Community Structure and Condition Status of Mangrove at Simuang Island

Community Structure: Quadratic Transect method
Biomass Estimation (AGB) > Allometric Model
Vegetation Carbon Estimation (AGC) > IPCC method
CO2 Absorption by Mangrove > Conversion From AGC, SOC, using Ar and Nr of CO2

Strata	Life Zone	Species	St. (m)	DBH (cm)	F	FR (%)	Dist	Dist #	Dist (%)	SNP (No)	Status
I	Tengah	R. apiculata	30	107	60.23	1	0.01	217	20.09	120.36	Dist
		R. mucronata	1	20	2.24	12	0.04	1.48	13.40	13.40	
		R. cuneata	1	20	3.22	12	0.04	1.72	14.91	14.91	
		R. gubernata	1	20	35.65	14	0.05	30.19	93.94	93.94	
		Sub-total	31	79	100	14	0.06	47.79	138	138	
	Distur	R. mucronata	30	120	87.71	1	0.01	21.16	18.72	18.72	Dist
		R. apiculata	2	10	2.49	0.2	0.00	2.03	2.03	2.03	
		R. cuneata	1	10	1.41	0.2	0.00	1.17	1.17	1.17	
		R. gubernata	1	10	1.70	0.20	0.00	1.36	1.36	1.36	
		Sub-total	37	140	100	2	0.02	24.11	23.29	23.29	
Distur	R. mucronata	1	10	11.41	1	0.01	1.28	1.19	1.19	Dist	
	R. cuneata	1	10	10.82	1	0.01	1.28	1.19	1.19		
	R. gubernata	1	10	10.82	1	0.01	1.28	1.19	1.19		
	Sub-total	11	39	100	3	0.03	3.74	3.56	3.56		
	TOTAL			174				100	119		119



CONCLUSIONS

- Mangrove ecosystem in Simuang Island was in Decid mangroves, Consisted of 4 species (*R. apiculata*, *R. mucronata*, *R. cuneata*, *R. gubernata*)
- The condition status of mangrove ecosystem of Simuang Island is still good condition with dense category (Based on $1200 \leq \text{SNP} \leq 1500$ LI No. 23, 2006)
- The Biomass, Carbon Stock, as well as CO2 absorption were 169,29 ton/ha; 600,67 ton/ha dan 1393,72 ton/ha respectively.

Current Status of Mangrove Ecosystem of Kolaka and Their Ecological Role to Reduce the Global Climate Change Impact and Protecting Coastal Resources

Current Status of Mangrove Ecosystems of Kolaka and Their Ecological Role to Reduce the Climate Change Impact and Protecting Coastal Resources

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BACKGROUND & AIMS

Abstract at: <https://doi.org/10.30605/ijms.v1i1.10001>
and <https://doi.org/10.30605/ijms.v1i1.10002>
A study was conducted to assess the current status of mangrove ecosystems in Kolaka, Indonesia, and their ecological role in reducing the global climate change impact. The study was conducted in Kolaka, Indonesia, in 2021. The study was conducted in Kolaka, Indonesia, in 2021. The study was conducted in Kolaka, Indonesia, in 2021.

Keywords: mangrove ecosystem, climate change, carbon stock, biodiversity, coastal resources.

Methods: The study was conducted using a combination of field observations and laboratory analysis. The field observations were conducted in Kolaka, Indonesia, in 2021. The laboratory analysis was conducted in the laboratory of the Department of Marine Science, USN Kolaka.

Results: The study found that the mangrove ecosystem in Kolaka is currently in a degraded state. The carbon stock of the mangrove ecosystem is low, and the biodiversity is also low. The study also found that the mangrove ecosystem plays a significant role in reducing the global climate change impact and protecting coastal resources.

Conclusions: The study concludes that the mangrove ecosystem in Kolaka is currently in a degraded state. The carbon stock of the mangrove ecosystem is low, and the biodiversity is also low. The study also found that the mangrove ecosystem plays a significant role in reducing the global climate change impact and protecting coastal resources.

References: The study references several scientific papers, including: <https://doi.org/10.1016/j.jclepro.2021.127111>, <https://doi.org/10.1016/j.jclepro.2021.127112>, <https://doi.org/10.1016/j.jclepro.2021.127113>, <https://doi.org/10.1016/j.jclepro.2021.127114>, <https://doi.org/10.1016/j.jclepro.2021.127115>, <https://doi.org/10.1016/j.jclepro.2021.127116>, <https://doi.org/10.1016/j.jclepro.2021.127117>, <https://doi.org/10.1016/j.jclepro.2021.127118>, <https://doi.org/10.1016/j.jclepro.2021.127119>, <https://doi.org/10.1016/j.jclepro.2021.127120>.

RESULTS

Status, Aboveground Biomass, Carbon Stock & CO2 Absorption

Location	Species	AGB (Mg DW)	Carbon Stock (Mg C DW)	CO2 Absorption (Mg CO2 yr)
Intuba	<i>R. apiculata</i>	80.08	31.43	33.32
	<i>R. mucronata</i>	13.90	5.18	25.23
	<i>S. alba</i>	54.82	20.25	207.26
	<i>R. geminata</i>	4.08	1.45	6.27
Sub-total		252.87	68.32	224.14
Mangrove	<i>R. apiculata</i>	120.07	50.86	132.05
	<i>R. mucronata</i>	28.05	10.74	42.63
	<i>C. legalis</i>	38.35	15.16	22.32
	<i>R. geminata</i>	35.57	13.07	23.82
Sub-total		222.04	80.78	221.77
Wandulaka	<i>R. geminata</i>	26.76	9.74	22.46
	<i>S. alba</i>	65.84	24.97	76.74
	<i>R. apiculata</i>	38.77	15.18	38.80
	<i>R. mucronata</i>	18.47	6.95	21.35
Sub-total		149.84	56.84	169.35
Busta	<i>R. apiculata</i>	4.47	1.68	4.29
	<i>S. alba</i>	30.6	11.68	22.20
	<i>R. mucronata</i>	194.27	74.40	432.30
	<i>R. geminata</i>	493.58	184.11	886.45
Sub-total		772.92	271.87	1345.24

Biodiversity of Associate Organisms

No	Family	Species	Status	Location
Invertebrates	Cnidaria	<i>Hydra sp.</i>	+	Intuba
		<i>Hydra sp.</i>	+	Mangrove
		<i>Hydra sp.</i>	+	Wandulaka
		<i>Hydra sp.</i>	+	Busta
		<i>Hydra sp.</i>	+	Wandulaka
Fish	Pomacentridae	<i>Pomacentrus sp.</i>	+	Intuba
		<i>Pomacentrus sp.</i>	+	Mangrove
		<i>Pomacentrus sp.</i>	+	Wandulaka
		<i>Pomacentrus sp.</i>	+	Busta
		<i>Pomacentrus sp.</i>	+	Wandulaka
		<i>Pomacentrus sp.</i>	+	Intuba
		<i>Pomacentrus sp.</i>	+	Mangrove
		<i>Pomacentrus sp.</i>	+	Wandulaka
		<i>Pomacentrus sp.</i>	+	Busta
		<i>Pomacentrus sp.</i>	+	Wandulaka
		<i>Pomacentrus sp.</i>	+	Intuba
		<i>Pomacentrus sp.</i>	+	Mangrove
		<i>Pomacentrus sp.</i>	+	Wandulaka
		<i>Pomacentrus sp.</i>	+	Busta
		<i>Pomacentrus sp.</i>	+	Wandulaka

CONCLUSIONS

- Generally, mangrove ecosystems in this area have been degraded by several factors such as deforestation, pollution, and agricultural expansion.
- The mangrove ecosystem that still exists was in a degraded state.
- Mangrove, this area still has a good mangrove condition, but has a relatively degraded mangrove, dominated by *R. apiculata*.
- Even though this mangrove was degraded, it still had the potential as carbon stock, and to reduce atmospheric CO2. They also have a biological value as a habitat for several organisms, including several crustaceans, mollusks, and fish.
- Efforts to manage mangrove as a sustainable resource for sustainable development by mitigating the impact of climate change and protecting coastal resources.

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Protecting Mangrove - Sustainability of Coastal Resources

Design Concept of USN Kolaka Central Park in Tanggetada Campus

Design Concept

USN Kolaka Central Park in Tanggetada Campus

Background and Aims

A park is a space of land covered with trees, shrubs and grass areas, combined with other aspects, activities and facilities. Parks are commonly used for sporting activities, leisure and recreation (Djurnal, 2008).

This location, on the largest existing in Kolaka Regency, has a complex to build a student and Tanggetada Campus. The campus in Tanggetada Campus is the largest campus, and it has a vast land area (over 400 hectares). Since then, the campus has a large open area. There is a need for a park to use, it doesn't have a facility to accommodate the needs for sporting activities, leisure or recreation in the campus area.

This research aims to create a design concept of Central Park in the Tanggetada Campus of USN Kolaka, that can accommodate various outdoor activities and become the focal point of the campus area.

Methods

This research is conducted using Grasshops Design Method. According to Jurek (1972), this design method is carried out manually and logically. The design concept that is created here will create a new concept, but goes on to the general design level: shapes, which are defined not by considering cost and materials.

They are intended to create an optimal land use and functioning circulation, as well as providing a suitable space for the surrounding landscape. These are intended to be existing site, site trajectory, land use and circulation, travel routes, materials and furniture needs.

Results

The analysis shows that the best location for the Central Park in Tanggetada Campus is in the middle of campus area. This makes it easier to access for all of people in this campus, while also maximizing the importance of the park.

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Site Analysis

Existing Site

Site Transformation

Sun Trajectory

Shape and Circulation

Materials and Furniture Needs

Pavement

Providing safe and comfortable walking path, with different patterns to serve as a marker for different zones or functions. Concrete paving structure should be used for main paths, and permeable for secondary paths.

Planting

Low grass table cut as an absorbent for rainwater runoff. Shade and create an aesthetically pleasing view to the environment. Planting grass for functional purposes in line with water because of its ability to absorb and regulate water pressure.

Lighting

The existence of fountain pool and sculpture at the center of the park serves as a symbol of the environment. The water in the fountain will help reduce the temperature in the area.

Core Concept

Promoting sustainability.

Conclusion

Plan View Detail

900 cm

Section Detail

1800 mm

Site Plan

120 Street

425

Determination of Neutral Ozone Water Concentration at Titanium Dioxide Electrodes with Different Film Thicknesses



Determination of Neutral Ozone Water Concentration at Titanium Dioxide Electrodes with Different Film Thicknesses

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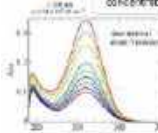
Introduction



Strong oxidizing power

Spontaneous decomposition, ozonolysis

Because ozone water decomposes, its concentration should be measured before use.



Spectrum of ozone water decomposition



Ozone decomposition reaction



Does not react with ozone.



Non-oxidizing

Aim

- To find the optimum film thickness of Titanium dioxide.
- 1) FTO glass does not react with ozone.
- 2) Titanium dioxide does not oxidize but reacts with ozone. However, due to its semiconductor properties, it has a high resistivity.

Experimental Procedure

Preparation of Titanium Dioxide on FTO Electrode



Heated on a hot plate at 420°C or higher

Spraying of precursor solution

Prepared 1, 3, 5, 10, 50, 300 sprays



Sintering to complete titanium dioxide electrode

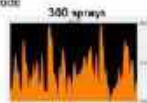
Comparison of ozone detection performance with each electrode

After sintering

Surface of titanium dioxide electrode



Unevenness of titanium dioxide surface from above



Uneven cross section of titanium dioxide

Estimation of Film thickness: average 0.220 μm, standard deviation 0.100 μm

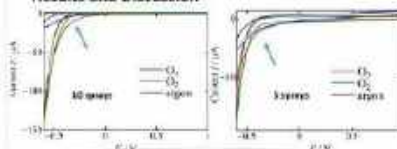
Electrochemical Measurement

100 μm² TiO₂ on FTO Glass disk (diameter: 5.4 mm) 4 / V vs Ag/AgCl Supporting Electrolyte Na₂SO₃ 50 mM



Scan rate of sweeping

Results and Discussion



Ozone reduction peak was appeared around -0.4V

Relationship between ozone concentration and peak current

$$i_p = 0.4463 \times n^2 F A C \sqrt{\frac{D \nu}{RT}}$$



Calculated using a six-electron reaction with a diffusion coefficient of $1.7 \times 10^{-5} \text{ cm}^2 \text{ s}^{-1}$

Number of sprays	Peak current / μA	E _p / V	Diffusion coefficient / cm ² s ⁻¹	Correlation coefficient
1	-0.83	-0.20	26.6	0%
3	-2.82	-0.40	14.6	12%
5	-3.88	-0.44	19.2	37%
10	-8.34	-0.37	21.2	77%
30	-5.16	-0.47	11.2	51%
300	-1.23	-0.30	23.8	9%

consideration



In the case of 1 spray, the titanium dioxide is not tightly covered. In the 300 sprays, the titanium dioxide acts as a resistance layer.

Conclusion

- In this experiment, an electrode with 10 sprayed layers of titanium dioxide achieved a yield of 77%.
- Based on the electrode with a thickness of 300 sprayed layers, a titanium dioxide film thickness of 9 nm is considered suitable for ozone detection.

Development of Operational Curriculum Based on Local Wisdom of Coastal by Optimization of the Merdeka Mengajar Platform Assistance by Trello : Accelerating the Implementation of Kurikulum Merdeka



A Background

Within the context of education, local wisdom serves as a valuable source of learning to assist students in enhancing their understanding of the surrounding culture and environment."



"To expedite the implementation of the Merdeka Curriculum, the adoption of appropriate innovations and strategies is essential, particularly for schools intending to autonomously implement the Merdeka Curriculum, such as SMK Negeri 12 Keloko. Based on the conditions and challenges faced by SMK Negeri 12 Keloko, an acceleration strategy can be effectively executed through the utilization of learning management and the Trello application."

B Aims



Develop a curriculum that is relevant to the needs and potentials of the local community.

"Developing a valid Coastal Local Wisdom-based Operational Curriculum as a guideline for educators in accelerating students' Industry Competency Certification (IKK) achievement at SMK Negeri 12 Keloko."

C Methods

"The methodology employed in this endeavor encompasses testing and monitoring."



AUTHORS



DOI: 10.30605/edukatif.v5i2.p14-18

E Results

<https://forms.gle/GTb2yF1KlR66ex2H?>
The initial teacher comprehension chart



The total number of responses in this initial understanding questionnaire was 10 teachers at SMK Negeri 12 Keloko consisting of teachers from various subjects and grade levels. Based on the initial understanding data, it can be seen that 90.9% of teachers still do not understand the educational and operational curriculum in the independent curriculum, meaning that out of a total of 10 respondents who filled out the questionnaire, 9 teachers did not understand.



The final teacher comprehension chart



Trello App View



C Conclusions

8% of teachers are able to understand the operational curriculum of educational units in the independent curriculum, 9.2% of teachers already understood how to use the major id account, while in understanding the Trello application, 10 teachers or 71.4% know and understand the Trello application.

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Development of Physics E-Learning Platforms Utilizing Google Sites to Enhance The Learning Interest on Grade X High School Students : The Effort to Accelerate Implementation of Kurikulum Merdeka.

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Development of Physics E-Learning Platforms Utilizing Google Sites to Enhance The Learning Interest on Grade X High School Students : The Effort to Accelerate Implementation Of Kurikulum Merdeka.

Syahril and Gede Purwana Edi Saputra, Physic Education, Sembilanbelas November Kolaka University

A Background

In the 21st century, the development of technology and information is increasing due to major advances in the field of information and communication technology.

At Senior High School 1 Kodeoha the use of physics e-learning, especially gongle sites, already exists but has not been maximized because the features used by teachers are still limited.

B Aims

Produce a product in the form of physics e-learning based on Google Sites as an effort to increase the learning interest of Class X high school students.

C Methods

Research and Development (R & D) method with ADDIE model (Analysis, Design, Development, Implementation, Evaluation).

ADDIE Model:

- ANALYSIS:** Needs, requirements, task, participants' current capabilities
- DESIGN:** Learning objectives, delivery format, activities & exercises
- DEVELOPMENT:** Create a prototype, develop course materials, review, pilot session
- EVALUATION:** Awareness, knowledge, behavior, results
- IMPLEMENTATIONS:** Training, implementations, tools in place, observation

AUTHORS

E Results

Link: <https://sites.google.com/view/rumahbelajarfisika/login>

SCAN ME

G Conclusions

Google sites-based e-learning product in the form of "Rumah Belajar Fisika" for SMA class X and increase interest in learning.

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Glucose Supplementation in Egg Yolk Lactate Ringer Diluent on Spermatozoa Quality of KUB Chicken at 5°C Storage



Glucose Supplementation in Egg Yolk Lactate Ringer Diluent on Spermatozoa Quality of KUB Chicken at 5°C Storage



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INTRODUCTION

KUB chicken is a superior breed of chicken resulting from a breeding program through selection and mating resulting in high meat and egg production. Research with glucose supplementation on egg yolk Ringer lactate basic diluent is expected to be able to maintain the quality of spermatozoa of KUB chickens up to 120 hours of storage at 5°C

METHODS

The material for this research, namely semen from KUB chicken. The stages of this research are: collection and evaluation of semen, preparation of diluent, dilution of semen, storage of semen, and observation of liquid semen. Parameters are motility, viability, abnormalities, and plasma membrane integrity. The research using a RAL 4 treatments (control, 10 mM glucose addition, 30 mM glucose, and 50 mM glucose), observations were repeated 10 times.

RESULTS

Spermatozoa Motility of KUB Chickens

Treatment	Storage Time					
	0 Hours	24 Hours	48 Hours	72 Hours	96 Hours	120 Hours
Control	92,50±2,64 ^a	65,00±4,08 ^a	31,50±5,80 ^a	18,50±6,69 ^a	13,00±8,23 ^a	3,00±5,38 ^a
glucose 10 mM	90,50±2,84 ^a	59,50±11,85 ^a	40,50±8,96 ^a	33,00±9,78 ^a	23,50±14,35 ^b	14,00±7,75 ^b
glucose 30 mM	92,00±2,58 ^a	60,00±7,82 ^a	43,50±7,84 ^a	35,50±5,99 ^b	28,00±10,85 ^b	20,00±11,06 ^b
glucose 50 mM	91,50±4,74 ^a	65,50±4,38 ^a	51,50±6,26 ^a	41,50±3,37 ^a	37,50±4,86 ^c	26,00±10,49 ^b
Total Average	91,62±3,29	62,50±7,84	41,75±10,10	33,13±10,80	25,50±13,24	18,75±12,17

Spermatozoa Viability of KUB Chickens

Treatment	Storage Time		
	0 Hours	72 Hours	120 Hours
Control	96,58±1,31 ^a	35,05±4,86 ^a	7,54±12,99 ^a
glucose 10 mM	95,56±1,68 ^a	41,55±15,56 ^b	22,09±11,80 ^b
glucose 30 mM	95,91±1,73 ^a	49,65±3,65 ^b	26,80±14,63 ^b
glucose 50 mM	95,79±1,15 ^a	64,14±6,57 ^c	33,73±12,11 ^b
Total Average	95,96±1,48	47,60±13,97	22,54±13,77



Abnormality

Treatment	Storage Time	
	0 Hours	72 Hours
Control	3,10±0,64 ^a	18,19±1,40 ^a
glucose 10 mM	3,47±1,18 ^a	17,27±2,34 ^a
glucose 30 mM	3,26±0,57 ^a	17,36±1,41 ^a
glucose 50 mM	3,71±1,70 ^a	14,19±3,02 ^b
Total Average	3,38±1,11	16,79±2,69

Integrity of the plasma membrane

Treatment	Storage Time		
	0 Hours	72 Hours	120 Hours
Control	97,15±0,98 ^a	73,79±3,80 ^a	20,22±32,57 ^a
glucose 10 mM	96,79±2,21 ^a	83,28±5,19 ^b	50,50±27,87 ^b
glucose 30 mM	96,17±3,27 ^a	83,70±5,10 ^b	54,57±29,54 ^b
glucose 50 mM	96,26±2,67 ^a	80,62±1,21 ^b	60,46±21,84 ^b
Total Average	96,59±2,39	80,40±6,03	46,45±31,36

CONCLUSION

The conclusion of this study was that supplementation of 50 mM glucose into basic diluent Ringer lactate in egg yolk was able to maintain motility, viability, plasma membrane integrity and minimize spermatozoa abnormalities in KUB chickens up to 120 hours of storage at 5°C.

Habituation E430orts by Teachers in Fostering Student Awareness Through the Implementation of the Second Precept Pancasila at MTsN 4 Central Buton



Habituation Efforts by Teachers in Fostering Student Awareness Through the Implementation of the Second Precept Pancasila at MTsN 4 Central Buton

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INTRODUCTION

Indonesia is a country that makes Pancasila the principle in organizing state affairs, which includes political, social, economic, cultural and educational systems. The existence of Pancasila in the education system in Indonesia gives the impression that learning objectives not only focus on cognitive aspects but also affective and psychomotor aspects. With proper education, it is expected to be able to change the attitude, behavior and quality of the future generation of national teachers to be better.

The purpose of the study

To find out the habituation efforts made by teachers in fostering student awareness through the implementation of the second principle of Pancasila at MTsN Negeri 4 Buton Tengah, to find out what habits are carried out as a reflection of the practice of the second precept of Pancasila in students at MTsN Negeri 4 Buton



RESEARCH RESULTS

Habituation efforts made by teachers in fostering awareness of class VII students through the implementation of the second principle of Pancasila at MTsN Negeri 4 Central Buton, namely by introduction of helping, habituation of responsibility, habituation of mutual respect, habituation of honesty and habituation of discipline.

METHODS

The method used in this research is descriptive research with a qualitative approach, as stated by (Mulyono, 2016) qualitative descriptive methods are research methods based on the philosophy of postpositivism and to research on natural object conditions and explore meaning over generalization. In this study describes, explains and explores in more detail about the state of a group in this case the situation of students at MTsN Negeri 4 Central Buton about the Application of the 'Second Precept of Pancasila



CONCLUSION

Habituation efforts made by teachers to foster awareness through the second precept of the second precept of Pancasila include first efforts to habituate helping students who when they see their friends in trouble, then their other friends will help them, second efforts to habituate responsibility by giving teachers instructions to students to keep the class clean, third efforts to habituate mutual respect by implementing 5s (selective, attitude, safety, polite and respectful), fourth, honesty habituation efforts carried out by holding an honesty campaign, fifth efforts to habituate discipline in students is aimed to make to study on time by implementing habituation of polite teachers mutual and giving attention to students who come late.

Implementation of KNN Method for Predicting New Students

IMPLEMENTATION OF K-NN METHOD FOR PREDICTING NEW STUDENTS

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Introduction

K-Nearest Neighbors, often abbreviated as K-NN, is a widely used supervised machine learning algorithm that falls under the category of instance-based learning. It is a simple yet powerful algorithm used for classification and regression tasks. K-NN is a non-parametric algorithm, which means it doesn't make any assumptions about the underlying data distribution.



In the field of education, particularly at the higher education level, predicting new students is one of the essential aspects to ensure the sustainability and development of educational institutions. This prediction not only involves numbers but also relates to the quality, interests, and potential of new students who will join. The importance of predicting new students includes resource planning, financial management, marketing and promotional strategies, facility preparedness, scholarship program adjustments, and anticipating changes.

Methods

Data Collection: Historical student enrollment data. **Data Processing:** Data cleaning and normalization. **K-NN Implementation:** Selection of the 'K' value, distance calculation, and classification.

Results

To illustrate the calculation of K-NN for predicting the number of new students, we will use a simple training dataset with only 5 entries. In this case, we will attempt to predict the number of new students based on two features: the number of high school students and the entrance exam scores.

Data	X1	X2	Y
2022	109	90	68
2021	104	125	121
2020	200	180	188
2019	120	111	108
2018	185	162	156

Now, let's assume we want to predict the number of new students (Y) for a prospective student who has a number of high school students (X1) of 130 and an entrance exam score (X2) of 82.

The calculation steps are as follows:

Step 1: Calculate the distance between the prospective data point and each point in the training data. We can use the Euclidean distance formula to calculate the distance. The distance between the candidate and Data 1:

$$d = \sqrt{(130 - 109)^2 + (82 - 90)^2} = 31.80$$

Step 2: Sort the training data based on distance from smallest to largest:

Data	Distance
2018	30.88
2022	31.80
2021	55.03
2019	87.32
2020	127.86

Step 3: Select K nearest neighbors. For example, we choose K = 3. We select the 3 nearest neighbors based on the shortest distance, which are Data 1, Data 2, and Data 3.

Step 4: Calculate the average number of new students from K nearest neighbors as the prediction. Prediction of the number of new students $Y = (108 + 80 + 121) / 3 = 109.33$

In real-world cases, use larger training data and more features to obtain more accurate predictions.

Conclusions

The prediction of new students is not just about knowing how many students will enroll. Beyond that, this prediction serves as the foundation for strategic decision-making that influences the future of educational institutions. Therefore, a systematic, analytical, and data-driven approach to prediction is key to ensuring the sustainability and success of educational institutions in the future.


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Level of Knowledge, Attitude, and Behavior of Coastal Communities Toward Wound Self-Medication in Kolaka Regency

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LEVEL OF KNOWLEDGE ATTITUDE AND BEHAVIOR OF COASTAL COMMUNITIES TOWARD WOUND SELF-MEDICATION IN KOLAKA REGENCY

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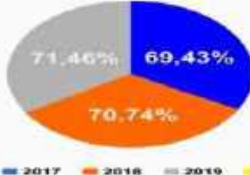
BACKGROUND

Self-medication is an activity of detecting and using drugs without a doctor's prescription, both symptomatic and traditional medicine.

FALSAH A FEBRIYANTO, 2021

Indonesia is an area that almost 70% consists of oceans. The Indonesian population mostly lives in coastal areas.

Central Bureau of Statistics in Indonesia



OBJECTIVE

This research is used to determine how the knowledge, attitudes, and behavior of coastal communities about wound self-medication and the relationship between coastal community knowledge of wound self-medication behavior, as well as the relationship between coastal community attitudes towards wound self-medication behavior.

METHOD

Research type: Quantitative
Place: Coastal Areas, East Wajukene, Village of Kolaka Regency
Approach: Descriptive
Technique: Questionnaire

RESULTS AND DISCUSSION

N = 140 Respondents

Treatment:

- Synthetic drugs
- Wetmore acid
- Ampicillin
- Amoxicillin
- Traditional medicine
- Sea water
- Uter oil
- Kubbing Kubbing leaves (Lantana Camara L)
- Arukanda leaves (Chromolaena odorata)
- Infus suppres (1 most conventional)

Type of injury:

- Abrasions
- Cuts
- Abrasiod
- Stab wound
- Burns

Coastal community

- Experience
- Gender
- Religion
- Income
- Marital status
- Already married

Main income: Rp. 1,500,000 - Rp. 4,500,000

Knowledge of wound treatment

- Good 5.0%
- Moderate 61.4%
- Low 33.6%

Attitude

- Strongly Dislike 1.4%
- Dislike 1.4%
- Like 97.2%

Behavior in wound treatment

- Self care orientation
- Satisfaction
- Medicine 8.6%
- Less 25.7%

There is a relationship between knowledge and behavior and attitude towards behavior:

- Knowledge of behavior: $r = 0.888$, $p = 0.000$
- Attitude Towards Behavior: $r = 0.874$, $p = 0.000$

KESIMPULAN

People who live on the coast have moderate knowledge, good attitude, good behavior and there is a relationship between knowledge of wound self-medication behavior and there is a relationship between coastal community attitudes towards wound self-medication behavior.

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Local wisdom on the structure and construction of the Kajang House

www.researchgate.net/publication/307804613

Local wisdom on the structure and construction of the Kajang House

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Background

The region of Sulawesi Regency is vulnerable to earthquakes and volcanic disaster. The Golea-Dag isolated eruption zone, which could result in tsunami, is located to the east of Sullumbura. A fault called **Wafurran** exists in Sulawesi Regency's tectonic and has the potential to cause earthquakes that could cause land sliding (Rahma, et al., 2012). In this **earthquake**, especially rural buildings, especially houses. Houses must be built to withstand the impact of seismic movement. In addition to local knowledge, earth is an interactive material. Because it is highly adaptable and easy to work with, earth becomes an alternative of steel and concrete construction technology, wood was

The Kajang area also known as the **Arung** area, has lived in harmony with the naturally rich natural environment for hundreds of years and has maintained a traditional way of life. The **Arung** **The Aristocrat Community's** houses' structure and form are significantly influenced by the construction of these traditional houses (Pratiwi, 2019). (Yus, M, 2015). The form of the Arung The Kajang people are called **Kajang**, just like other traditional structures in South Sulawesi. The use of natural materials, natural propagation, natural sustainability, lack of ornamentation, and other structures of social structures are historical their building form (Weebah W. et al., 2017).

The aim of this research is to find out what the **structure and construction of the traditional Kajang House** is, which is considered a building that has existed for hundreds of years and has been proven to be resilient to earthquake attacks as one of the **local wisdoms** that must be considered and developed.

Research method

The research method used carried out by **exploratory, descriptive and phenomenological** analyses of several details of traditional buildings that structurally related elements. Analysis carried out by **historical, descriptive, research and three-dimensional** interpretation of the building and its construction details.

Research results and discussion



Paik Perawatan Kayu / Oak (Shoring)

Detailing Material / Materials



Traditional Construction

Conclusion

The research results show that the structure and construction of the Kajang house uses **appropriate technology**, the house module (form) concept is applied from **long view** (wide perspective) into multiple view, the **flat roof** finishing concept of the material is different according to the original. Overall, the construction of the Kajang House meets all the principles of an **appropriate-technology house**. The Kajang residents in all houses in Sulawesi Regency is achieved through a **robust structural system** in each part, namely bottom, middle and top.

Magnetic Properties of Sustainable Chromic Material CuMoO₄

Magnetic Properties of Sustainable Chromic Material CuMoO₄

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What are Sustainable Materials?

- ✓ Sustainable materials are materials used throughout our consumer and industrial economy that can be produced in required volumes without depleting non-renewable resources and without disrupting the established steady-state equilibrium of the environment and key natural resource systems.
- ✓ Sustainable Materials Management (SMM) is a systemic approach to using and reusing materials more productively over their entire lifecycles. It represents a change in how a society thinks about the use of natural resources and environmental protection. By looking at a product's entire lifecycle, new opportunities can be found to reduce environmental impacts, conserve resources, and increase profits.

U.S. EPA's SMM lifecycle of materials and products from material extraction, manufacturing, distribution, use and end-of-life.



Copper Molybdate (CuMoO₄)

Chromism: the color of a material changes reversibly upon some external stimulus: temperature and pressure, light, solvent, and presence of ions and electrons

Low-T phase
= CuMoO₄
(brownish red)



High-T phase
= Cu₂O
(green)



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- ✓ Chromism phenomena of CuMoO₄ provide valuable information about temperature and pressure.
- ✓ Chromic material is a candidate for sustainable materials.

TBA


Mapping of Student Favourite Courses: A Case Study of Competence, Performance and Information Literacy Ability


MAPPING OF STUDENT FAVORITE COURSES: A CASE STUDY OF COMPETENCE, PERFORMANCE AND INFORMATION LITERACY ABILITY
 MUHAMMAD FATH AZZAJJAD*, DEWI SATRIA AHMAR

BACKGROUND AND AIMS



BACKGROUND





AIMS

The focus of this research is to conduct a scientific study of the course by looking at competence, performance, and information literacy skills.

RESULT

Observation	Interview	Discussion
In education and teaching based courses always the level of exploration of students in learning is more enthusiastic and able to communicate, reading, information literacy and innovation.	In practice professional based on education and teaching to become student priority subjects.	The results of the learning experience from that education based courses and learning can better.
Conclusion : Education and teaching based courses are favorite subjects.		

METHODS

This research is a descriptive research, this research describes a broad perspective on the condition of learners and teachers in the Chemistry Education Study Program at the USN, Kolaka. Data and information collection techniques were carried out through open interview techniques using 40 respondents from students and lecturers who were selected by purposive sampling through determining respondent criteria. Furthermore, questionnaires were distributed to provide a more accurate data comparison. The framework of thought in conducting research is carried out systematically as steps taken to see the problems and descriptions of case studies of competence, performance, and literacy skills of students.

CONCLUSION

The output obtained is if the lecturer has good personal competence, namely discipline, responsibility, and normative values, it will have an impact on the psychology of students because they tend to feel confident in what is taught by the lecturer. Pedagogical competence will have an impact on performance, namely understanding student character, learning theory, curriculum development, learning process, and learning evaluation, with a variety of models will help students to minimize boredom in learning, which has an impact on mapping courses that students like.

Social competence is directly related to performance. Communication skills, collaboration skills, understanding of the formal environment, and cooperation between stakeholders and stakeholders will help create a conducive and progressive learning environment. Professional competence is directly related to performance. Mastery of scientific fields (course content and context), good professional competence conditions will have an impact on the scientific readiness of prospective teachers in carrying out their responsibilities because they have mastered their scientific fields. Information literacy skills show an impact on course mapping because good literacy skills in accessing, managing, interpreting, and evaluating the information provided will encourage learners to be enthusiastic in learning.

Maritime Industrial Literature a Bibliometric Analysis Approach


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Bibliometric Analysis Approach
MARITIME INDUSTRIAL LITERATUR

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School of Management, Universitas Hainan, Indonesia

BACKGROUND

Artikel ini merupakan penelitian literatur review dengan pendekatan bibliometrik dengan fokus pada subjek industri maritim. analisis bibliometrik dimaksudkan untuk mengungkap tren yang muncul dalam kinerja artikel dan jurnal, pola kolaborasi, dan konstituen penelitian, dan untuk mengeksplorasi struktur intelektual domain tertentu dalam literatur.





METHODE

Hasil pencarian dengan menggunakan basis data di Scopus.com menemukan 15.185 dokumen artikel Literatur penelitian mengenai maritime di Tahun 2020-2022. Selanjutnya di olah menggunakan bantuan alat VOSviewer

RESULT

Hasil seleksi menemukan 244 dokumen yang relevan. Tema paling banyak di ulas dalam penelitian Industri Maritim saat ini adalah Shipping, Maritime Transportation, Ship, Digitalization, dan Sustainable Development.



CONCLUSION

Key Words Penelitian yang paling jarang dikaitkan dengan Industri Maritim adalah Creativity, Authority, Controllers, Container Deman Forecast, dan Coastal Zone. Key word ini sangat di rekomendasikan untuk dilanjutkan dalam pengembangan penelitian bidang Industri Maritim

Optimization of Key Performance Indicators Through Cloud-Based Information Systems



**Optimization of Key Performance Indicators Through
Cloud-Based Information Systems**

NUH, NURTANZIS SUTOYO, AGUS NASIR, MARLINA MUSTAFA, IREZKA EKA MAYASARI,
SAHRIL, ROZALMI SALU, KAITORO

<p style="text-align: center;">BACKGROUND</p> <p>The use of Key Performance Indicators (KPIs) is crucial in evaluating the success or failure of an organization. However, the collected data often fail to provide actionable insights due to issues such as information delays, inaccuracies, or system complexity. Hence, there is a need for a solution that can maximize the utility of KPIs.</p>		<p style="text-align: center;">RESEARCH OBJECTIVES</p> <p>To assess the extent to which cloud-based information systems can enhance the effectiveness of KPIs.</p> <p>To identify the barriers and challenges in implementation.</p> <p>To make recommendations for optimal implementation of this system.</p>
<p style="text-align: center;">METHODOLOGY</p> <p>Literature Review Examining relevant journals, articles, and other publications.</p> <p>Expert Interviews Discussions with experts in the field of KPIs and cloud computing.</p> <p>Case Studies Analysis of several companies that have implemented this system.</p> <p>Data Analysis Using statistical and machine learning techniques for data interpretation.</p>	<p style="text-align: center;">INSTRUMENT</p> <p>a. Questionnaire b. Cloud-based analytical tools c. Semi-structured interviews</p>	<p style="text-align: center;">ANALYSIS</p> <p>Open Coding Identifying common themes in the data.</p> <p>Axial Coding Establishing relationships among variables or themes.</p> <p>Thematic Coding Looking for patterns or concepts that recur.</p> <p>Issue Tree Analysis Mapping out the relationship between various issues to determine focus areas.</p>
<p style="text-align: center;">CONCLUSION AND RECOMMENDATIONS</p> <p>Based on the analysis, this study will provide a model that can be adopted by companies to optimize their KPIs through cloud-based information systems. In addition, further action recommendations will be given to maximize the success of implementation.</p>		
		

Palm Sugar Business Development Model Through Mold-Making

Riset & Inovasi untuk Indonesia Maju *"Palm Sugar Business Development Model"*



By :
Dr. Yuli Purbaningsih, S.TP., MP
Helviani, S.P., M.Si
Norsalam, S.P., M.Si
Mufi Obi Kasmin, S.P., MP
Dr. La Simani, S.P., M.Si

Sugar palm trees yield sap with a high monetary value. Palm sugar processing is still done traditionally, yielding palm sugar, which is extensively consumed as a type of sugar that's healthy for the human body, utilized as an alternative food sweetener, and provides a source of income for some village people.

This study intends to implement a palm sugar business development model by engineering palm sugar molds. The study used qualitative research methodologies and focused on social phenomena and difficulties that arise during the growth of the palm sugar industry.



The result from this study is a modern palm sugar moulding unit based on a stainless steel machine that will be used as a role model for palm sugar business actors to ensure that the palm sugar production procedure is safe, and more hygienic (efficient), as well as faster (effective).




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Phytochemical, Antioxidant, and Antimicrobial of 80% Ethanol Extract of Konduru Fruit (*Benincasa Hispida* (Thunb.) Cogn.)

Kampus Merdeka
UNIVERSITAS SEMBELANBELAS NOVEMBER KALAKA



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Phytochemical, Antioxidant, and Antimicrobial Of 80% Ethanol Extract Of Konduru Fruit (*Benincasa Hispida* (Thunb.) Cogn.)

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Department of Pharmacy, Faculty of Science and Technology, University Sembilanbelas November, Kalaka, Southeast Sulawesi, Indonesia

Conclusions and Prospects


Konduru fruit flesh has the potential to be a natural antioxidant. The results of this study support the use of konduru fruit in the development of probiotic drinks and medicinal raw materials.

Introduction Of Konduru Plant

Known as Konduru/kundur name. Usually, as an ingredient in making vegetables

This fruit is high in fiber and contains many vitamins and minerals, consisting of calcium, phosphorus, iron, and potassium. (1)

Overcoming heartburn, hypertension, typhoid fever, diabetes, urinary tract disorders, and fever (1)(2)



Research Methods

- Sample Preparation
- sample maceration
- Phytochemical Screening
- Total Phenolic Essay
- Total Flavonoid Essay
- Antioxidant Essay
- Antimicrobial Essay
- Data Analysis


Results and Discussion

Profile Phytochemicals

The 80% ethanol extract of Konduru fruit flesh qualitatively contains:

- Alkaloid -
- Glycoside +
- Flavonoid +
- Terganol +
- Steroid -
- Saprotin +

Antimicrobial Activity

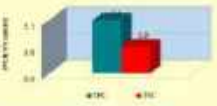


Solides Jernih

The 80% ethanol extract of Konduru fruit flesh does not have antimicrobial activity.

Total phenolic content (TPC) & total flavonoids (TFC)


The amount of phenolics and flavonoids in Konduru fruit is low, however, the extract shows antioxidant activity, which can be used as a natural antioxidant agent.




TPC TFC

DPPH-Free Radical Capture Activities

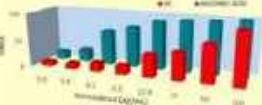
Phenolic content (mg)



Antioxidant (IC50)



IC50



Phenolic Content Antioxidant Activity

An 80% ethanol extract of Konduru fruit flesh has the potential to capture DPPH-free radicals.

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Plastic Waste into Hydrogen (H₂) and CNTs for Sustainable Renewable Energy by Microwave Irradiation

Plastic Waste into Hydrogen (H₂) and CNTs for Sustainable Renewable Energy by Microwave Irradiation



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Journal of Chemical Engineering and Sustainable Technology

Journal of Applied Physics, Institute of Technology Sepuluh Nopember

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Abstract

Indonesia is the world's fifth-largest most-producing country, generating 65.7 million tons of waste in 2020. The plastic waste issue in Indonesia has a negative environmental impact, but plastic materials can be converted into eco-friendly energy. This study presents a method for producing hydrogen and carbon nanotubes from plastic waste using iron-based catalysts and microwave irradiation. The approach can convert various types of plastic waste into hydrogen gas and CNT material. This innovative method offers a promising solution to the plastic waste problem, providing sustainable energy alternatives for the future.

Plastic Waste



Indonesia is the world's fifth-largest most-producing country, generating 65.7 million tons of waste in 2020. The plastic waste issue in Indonesia has a negative environmental impact, but plastic materials can be converted into eco-friendly energy. This study presents a method for producing hydrogen and carbon nanotubes from plastic waste using iron-based catalysts and microwave irradiation. The approach can convert various types of plastic waste into hydrogen gas and CNT material. This innovative method offers a promising solution to the plastic waste problem, providing sustainable energy alternatives for the future.

Gasification



The main components of plastic are carbon (C) and hydrogen (H) → normally heated to CO₂ and Hydrogen Gas (C₂H₄)

For the production of H₂, a two-stage gasification process must:

- Rapidly reaching at high temperature
- Longer furnace requires larger amounts of plastic for operation

Research Purpose

Producing clean energy from waste materials

Generating CNTs and Hydrogen Gas plastic waste with low energy consumption

Plastic Decomposition by Microwave Irradiation

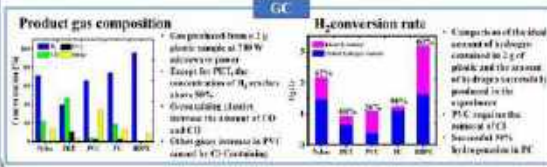
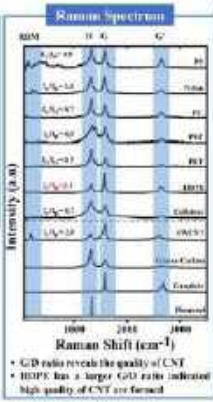
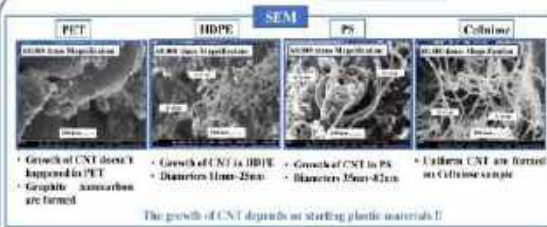
Specific Purpose:

- Decomposition of various plastics

Experiment



Result and Discussion



Conclusion

Plastic composition (by weight gas %)	H ₂ yield (g)	Conversion rate (%)
HDPE	7.7	67
PET	0.7	6
PS	4.1	37
PVC	5.4	48
CO ₂	5.3	65

- Various plastics successfully produce hydrogen gas
- More than 60% hydrogen gas conversion in plastic other than PVC
- New reactions that can be formed after depending on the type of plastic
- HDPE has the largest G/D ratio and is thought to produce clean CNTs
- In Nylon, HDPE-like peaks were observed, and SWCNTs may have been formed
- We still conduct experiments by actually mixing several types of plastics in the future

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LOOKING FOR A BOARDING HOUSE? WITH POPAKOS!

BACKGROUND AND INTRODUCTION

The background that underlies this application is the need for a solution to the issue of UMKH (Micro, Small, and Medium Enterprises) boarding houses in the Popalia village or around the UIN Kolaka Campus. In this context, students as the target consumers face difficulties in obtaining information about boarding houses, and the owners of these boarding houses still rely on manual methods for promoting their properties.

THE PURPOSE OF APPLICATION

This application serves as a bridge in the UMKH digitalization era, facilitating boarding house searches based on various proximity, facilities, affordability, and offering a digital map for location reference.

APPLICATION WITH SUPERIORITY

PopaKos has the advantage of offering comprehensive boarding house data, a wide range of options, and easy accessibility.

OUR TEAM

NUR HAFIDHA Satrio

NUR HAFIDHA Satrio

NUR HAFIDHA Satrio

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Profile of phytochemical compounds and antioxidants of the 70% ethanol extract of Pacikala seeds (*Etilingera elatior* (Jack) R.M.Smith) from North Kolaka, Indonesia

Profile of Phytochemical Compounds and Antioxidants of the 70% Ethanol Extract of Pacikala Seeds (*Etilingera elatior* (Jack) R.M.Smith) From North Kolaka, Indonesia

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A. Background

Pacikala (*Etilingera elatior* (Jack) R.M.Smith) is a plant species in the ginger family (Zingiberaceae) (1).

Pacikala contains flavonoids, terpenoids, tannins, phenols, alkaloids, saponins and steroids (2).

In the North Kolaka area, this plant, especially the seeds is empirically used by people as a cooking spice or acid substrates (3).

Village Puteak, North Kolaka

Scientific studies on *Pacikala* seeds are still lacking

B. Objectives

1. Identify the phytochemical compound profile of the 70% ethanol extract of *E. elatior* seeds.
2. To determine the antioxidant activity of the 70% ethanol extract of *E. elatior* seeds.

C. Methods

Phytochemical Compounds Profile, Quantitative Antioxidant Activity, Extraction of Pacikala, Quantitative Antioxidant Activity

Analysis Data
ANOVA - Tukey test (90.0%) and Microsoft software

1. Extraction of Pacikala Seeds

Weight extract 14.58 g
Yield of 17,6%

2. Phytochemical Compounds Profile

Phytochemical Compounds	Results
Alkaloids	Negative
Tannin	Negative
Flavonoids	Positive
Terpenoids	Negative
Steroids	Negative
Saponin	Negative

3. Qualitative Antioxidant Activity

The 70% ethanol extract has antioxidant activity which is indicated by a change in the color of the TLC plate from purple to yellowish white.

The 70% Ethanol extract

Ascorbic acid

4. Quantitative Antioxidant Activity

Concentration (µg/ml)	70% ethanol extract (DPPH scavenging)	Ascorbic acid (DPPH scavenging)
10	34.2	31.9
20	47.1	44.3
40	58.3	54.8
80	67.7	67.7

SC50 (µg/ml):
The 70% ethanol extract = 18,3
Ascorbic acid = 10,2

The 70% ethanol extract from *Pacikala* seeds has the potential to capture DPPH free radicals.

D. Conclusion

Pacikala seeds have the potential to be a natural source of antioxidant agents. The results of this study support the use of *Pacikala* seeds in the development of nutraceuticals and pharmaceutical raw materials.

Reference

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Project HTS (How To Stimulus) as an Effort to Internalize the Experience Learning of PAI IAI Al Mawaddah Warramah Kolaka Students in Understanding Student Development



Project HTS (How To Stimulus) as an Effort to Internalize the Experience Learning of PAI IAI Al Mawaddah Warramah Kolaka Students in Understanding Student Development

Direct: Harnurrahmeti, Helmi, Nur Tharrah Sholah
Mahasiswa Prodi PAI IAI Al Mawaddah Warramah Kolaka, Mahasiswa Prodi PAI IAI Al Mawaddah Warramah Kolaka, Dosen Prodi PAI IAI Al Mawaddah Warramah Kolaka
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Background and Aim: Learning experiences are a number of activities carried out to obtain new information and competencies in accordance with the goals to be achieved. The most important experience for students is experience in the form of educational lessons, which are centered on a meaningful goal, in accordance with work professionalism, as well as developing soft skills for the student himself. This research aims to provide learning experiences for students of the IAI Al Mawaddah Warramah Kolaka Islamic religious education study program in "student development" courses, so that they are able to understand student development theory contextually.



Methodology: This research is descriptive research with a qualitative approach. Data collection techniques used were observation, interviews, and distribution of questionnaires. The research data were analyzed using qualitative data analysis techniques.

Result: The results of the research show that: (1) 69.6% of the children chosen by students in carrying out the project were children aged (3-5 years) and 21.7% were children aged (1-2 years), (2) 70% The children chosen by students in this project were children who were contaminated with gadgets, (3) 100% of students gave positive responses to the HTS project which gave them experiences in understanding the development of students if they later become educators, (4) 80% of parents children who took part in this project gave positive responses to changes in children's playing patterns specially who were contaminated with gadgets, (5) 100% of students gave positive responses to the HTS project in providing educational values and contributing to their mindset as prospective educators.

Conclusion: HTS How To Stimulus Project as an Effort to Internalize Student Learning Experiences In Understanding Student Development Received a positive response from 10.9% of PAI IAI Al Mawaddah Warramah Kolaka students

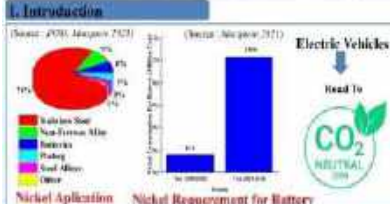
Roasting-leaching Assisted Microwave Irradiation for Nickel Extraction

Roasting-leaching Assisted Microwave Irradiation for Nickel Extraction

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Abstract - In recent years, the use of batteries to store energy has rapidly progressed due to the realization of a carbon-neutral society. Nickel, which has been used as a material for cathode slabs, is currently attracting attention as a high-energy battery material. On the other hand, currently, a lot of nickel is used in the refining of nickel. Leaching method is a promising method for extracting nickel without producing CO₂ gas emissions. In this study, nickel was extracted by leaching method using water at room temperature. In order to achieve this purpose with low environmental impact, it is necessary to not only convert the energy required for roasting into electricity, but also to study for more efficient methods. Microwave heating is considered to be more suitable than conventional heating methods. It has been reported that using microwave heating increases the diffusion effect. Therefore, we used microwave heating in the nickel leaching method to study whether it could have an effect on leaching efficiency. The process was carried out by roasting at 200°C and nickel leaching in water at room temperature (20-25°C) using a microwave. The effect of microwave power in this experiment is investigated. The extraction of nickel by simple leaching is analyzed by AAS (Atomic Absorption Spectrometry). The highest nickel extraction rate (94.2%) was obtained when the microwave power at 400 W (1000W/kg) for 20 minutes. This study shows that by using microwave heating system, it is possible to extract the same amount of nickel in the quantity of the time compared to using the conventional heating method. Nickel leaching method combined with microwave heating through it is an nickel leaching process with low environmental impact.



Kinds of Nickel Laterite Ore

Limonite: Ni = 1.0%, Fe = 30%, MgO = 0.5%, SiO₂ = 1.0%,
 Ni = 1.4-1.9%, Fe = 46-50%, MgO = 1.5-1.8, SiO₂ = 1.3-1.9%

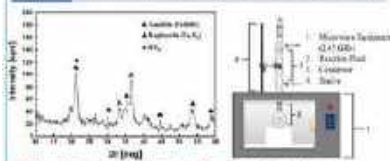
Goethite: Ni = 1.25-1.7%, Fe = 27-37%, MgO = 1.7-1.7%, SiO₂ = 1.0%,
 Ni = 1.0-1.7%, Fe = 30-35%, MgO = 1.7-1.7%, SiO₂ = 1.0%



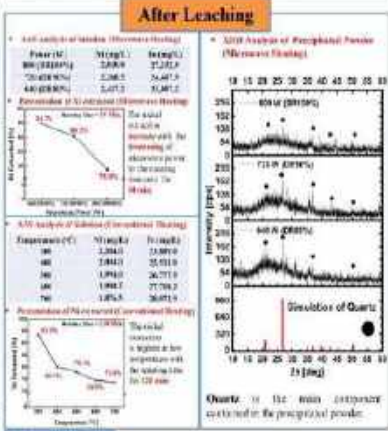
2. Experimental

Chemical composition of nickel laterite ore analyzed by XRF equipment

Component	Ni	Fe	Ca	MgO	SiO ₂	CaO	Al ₂ O ₃	SiO ₂	SiO ₂	SiO ₂	SiO ₂
Content (%)	1.04	33.12	0.18	1.22	22.48	1.71	0.17	7.84	0.07	0.16	0.16



3. Results



4. Conclusion

The microwave heating of laterite nickel ore was performed by microwave heating. Microwave power was used to increase the effect of leaching process on the nickel extraction. The extraction yield was successfully increased by 94.2% by using the microwave heating. It is possible to extract the same amount of nickel in the quantity of the time compared to using the conventional heating. It is thought that by using microwave heating in the nickel leaching process, the method proposed in this study can be used for nickel extraction in large-scale nickel mining.

References

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2. J. F. M. Silva et al., *Hydro. Sci. Eng.* 10, 106-112 (2017)

SIFONARA


Background and Introduction

The background that underlies this application is the need for information regarding the prisoner's freedom from prison, where the procedure is 3 months before the end of the detention period, the family needs to prepare complete documents related to the prisoner's release.

The Purpose of Application

The prisoner information system was created with hope that the families of prisoners who will soon be released will no longer need to come to the prison office to validate data. But it can be done via the SIFONARA APPLICATION

Application with Superiority

 Android Mobile based application

The SIFONARA application itself has the advantage of remotely accessing confirmation of files for prisoner release. Also available are prisoner search and call center features.



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Spatial Distribution of Dust Collected Around Nickel Industrial Area by Means of the Magnetic Susceptibility Measurements

Spatial Distribution of Dust Collected Around Nickel Industrial Area by Means of the Magnetic Susceptibility Measurements

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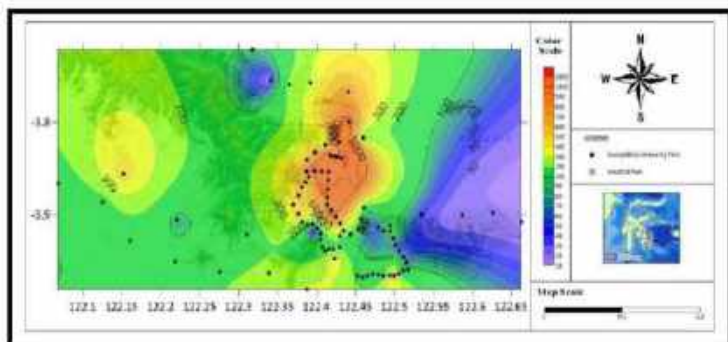
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Research on the susceptibility measurement of dust has been carried out in three administrative area: the Konawe Regency, North Konawe Regency and Kendari City, surrounding the nickel based industrial site. This study aims to determine the distribution of magnetic susceptibility and to estimate the pollution level based on the magnetic data. Magnetic susceptibility measurements were carried out using the Bartington MS2 susceptibility meter with the MS2B sensor. The measurement results show that the magnetic susceptibility at low frequency range is in the range of $17 \times 10^{-9} \text{ m}^3 \text{ kg}^{-1}$ to $539.5 \times 10^{-9} \text{ m}^3 \text{ kg}^{-1}$. High values of magnetic susceptibility are concentrated on the area around the industrial site. The dusts are dominated by the coarse superparamagnetic (SP) mixed minerals of in the range of 10% to 75%. Level of pollution is dominated by the low level of pollution (level I) of 63%, a moderate level of pollution (level II) of 12%, a high level of pollution (level III) of 9% and a very high level of pollution (level IV) of 16%.



Keywords: Magnetic dust, Magnetic Susceptibility, Air Pollution, Nickel Processing Industry

Study of Chemical Compounds and Antioxidant Activity of Methanol Extract of *Etlingera elatior* (Jack) R.M.Smith Seeds From North Kolaka, Indonesia

Study Of Chemical Compounds and Antioxidant Activity Of Methanol Extract Of *Etlingera elatior* (Jack) R.M.Smith Seeds From North Kolaka, Indonesia

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Conclusions and Prospects

E. elatior seeds have strong antioxidant activity comparable to the positive control ascorbic acid and the potential to be developed as a source of natural antioxidants that will direct the availability of pharmaceutical and nutraceutical raw materials.


Background

E. elatior → local wisdom plants from North Kolaka Regency → *E. elatior* seeds are used as a spice to add sour taste to food → chemical and pharmacological studies on *E. elatior* seeds from North Kolaka have never been reported.

Objectives

- To identify the chemical compounds of methanol extract of *E. elatior* seeds.
- To determine the antioxidant activity of methanol extract of *E. elatior* seeds.

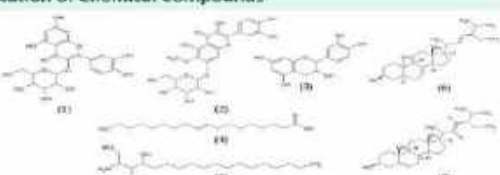
Methods



Results

Screening & Identification of Chemical Compounds

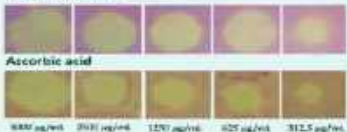
- Alkaloids
- Tannin
- Flavonoids
- Terpenoids
- Steroids
- Saponin




(1) Quercetin-3-O-galactide, (2) Fisetin-7-galactide, (3) Fisetin, (4) Fisetin-3-O-galactide, (5) Quercetin, (6) Quercetin-3-O-galactide, (7) Fisetin, (8) Fisetin-3-O-galactide, (9) Fisetin-7-galactide, (10) Fisetin-3-O-galactide, (11) Fisetin-7-galactide, (12) Fisetin-3-O-galactide, (13) Fisetin-7-galactide, (14) Fisetin-3-O-galactide, (15) Fisetin-7-galactide

Antioxidant Test Qualitative

Methanol extract



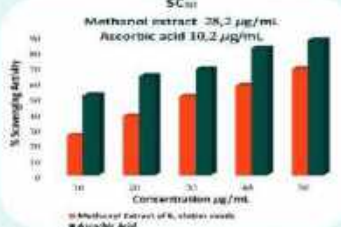
Ascorbic acid



Methanol extract has DPPH free radical scavenging activity as seen from the white zone formed on the TLC plate.

Methanol extract has high DPPH free radical scavenging activity based on the SC₅₀ value.

Antioxidant Test Quantitative



Methanol extract 38,2 µg/ml
Ascorbic acid 10,2 µg/ml

SC₅₀

Y-axis: SC₅₀ (µg/ml)

X-axis: Concentration µg/ml

Legend: Methanol Extract of *E. elatior* seeds (dark green), Ascorbic Acid (orange)

Reference

1. Permatasari, N. S., Mulyanti, R. (2021). The Effect of Methanol Extract of *Etlingera elatior* (Jack) on the Antioxidant Activity of *Streptococcus pneumoniae*. *Journal of Pharmacy* 1(1), 100-102.

2. Lestari, A. (2021). The Effect of Methanol Extract of *Etlingera elatior* (Jack) on the Antioxidant Activity of *Streptococcus pneumoniae*. *Journal of Pharmacy* 1(1), 100-102.

3. Lestari, A. (2021). The Effect of Methanol Extract of *Etlingera elatior* (Jack) on the Antioxidant Activity of *Streptococcus pneumoniae*. *Journal of Pharmacy* 1(1), 100-102.

4. Lestari, A. (2021). The Effect of Methanol Extract of *Etlingera elatior* (Jack) on the Antioxidant Activity of *Streptococcus pneumoniae*. *Journal of Pharmacy* 1(1), 100-102.

5. Lestari, A. (2021). The Effect of Methanol Extract of *Etlingera elatior* (Jack) on the Antioxidant Activity of *Streptococcus pneumoniae*. *Journal of Pharmacy* 1(1), 100-102.

The Acceleration of Ion Conductivity without Supporting Electrolyte in Iodine- Iodide Redox Reaction



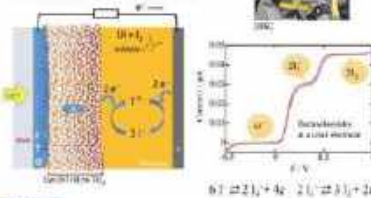
The Acceleration of Ion Conductivity without Supporting Electrolyte in Iodine-iodide Redox Reaction

Toyohiko Nishiumi^{1*}, Yuka Senda

¹ Department of Applied Physics, University of Fukui, Fukui 910-8507, Japan

Introduction

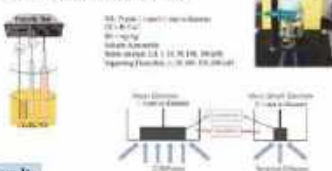
Dye Sensitized Solar Cell (DSSCs)



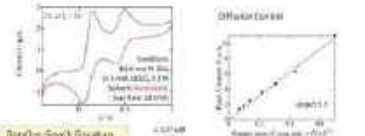
Aim:

- To elucidate the charge transport mechanisms of iodide ions in the electrolyte of DSSCs.
- To evaluate the charge transport capability through electrochemical measurements, we will utilize the redox reaction of iodine to determine the diffusion coefficient D and the number of reaction electrons n .

Electrochemical Measurement

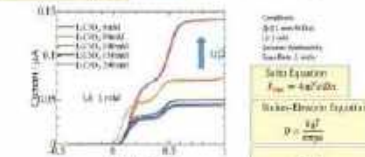


Results



Randles-Sevcik Equation: $I_p = 0.4463 n F A C \sqrt{\frac{D \nu}{\pi}}$

From the linear plot, the diffusion coefficient D is determined to be $D = 1.06 \times 10^{-5} \text{ cm}^2/\text{s}$.



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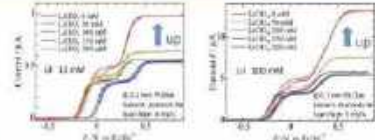


Fig. 1 Cyclic voltammograms of I₂/I⁻ redox at different concentrations of I₂ in the electrolyte. Scan rate: 10 mV/s.

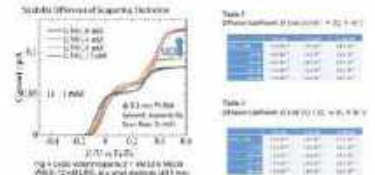


Fig. 2 Cyclic voltammograms of I₃⁻/I⁻ redox at different concentrations of I₃⁻ in the electrolyte. Scan rate: 10 mV/s.

Discussion

Estimation of a diffusion coefficient of Iodide Ion from CVs (1) and (2) (Scan rate: 10 mV/s).

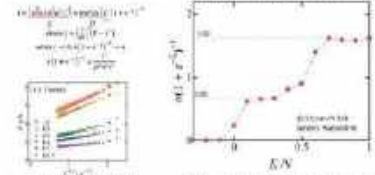


Fig. 3 Peak current of I₂/I⁻ redox at different concentrations of I₂ in the electrolyte. Scan rate: 10 mV/s.

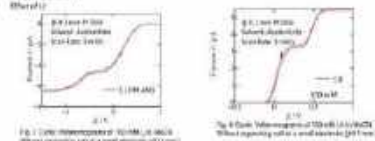


Fig. 4 Peak current of I₃⁻/I⁻ redox at different concentrations of I₃⁻ in the electrolyte. Scan rate: 10 mV/s.

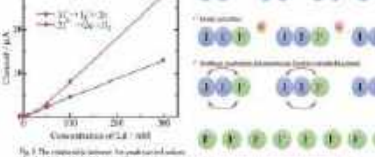


Fig. 5 The relationship between the peak current of I₂/I⁻ redox and the concentration of I₂ in the electrolyte. Scan rate: 10 mV/s.

Conclusion:

- In the second step, the diffusion rate of iodine ions accelerates through the Gouy-Chapman mechanism. The mechanism shows the facilitating of iodine ions to proton jumping and is induced by iodine ions.
- In the absence of supporting electrolyte, and at high concentrations, the reactivity should decrease due to reduced activity of ions. However, from these results, it was confirmed that the diffusion coefficient of iodide-iodine ions increases to more than five times to be $1.7 \times 10^{-5} \text{ cm}^2/\text{s}$.

The Phenomena in Kolaka: “Hard” Drugs into Drug Stalls an Observational Study



Kampus
Merdeka



The phenomena in Kolaka: “hard” drugs into drug stalls An observational study

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Background

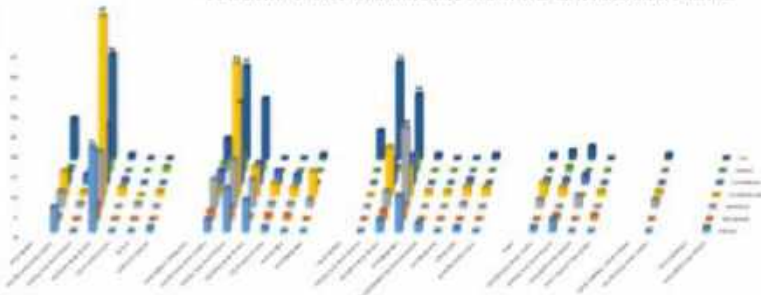
Every day, we are practicing self-medication in the form of self-care of our health. Self-medication has traditionally been defined as “the taking of drugs, herbs or home remedies on one’s own initiative, or on the advice of another person, without consulting a doctor.”

Method

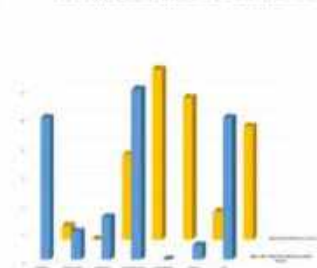
An observational study conducted in the district comprises the majority of population in Kolaka Regency. Cross-sectional survey was carried out to identify various kinds of medicines sold in 45 stalls.

Results

DISTRIBUTION OF OTC, “HARD” DRUGS, AND TRADITIONAL MEDICINES IN URBAN VILLAGES



DISTRIBUTION OF SUGAR AND PHARMACEUTICALS IN URBAN VILLAGES



Conclusion

Antibiotics and analgesics were the most prescription medicines sold in stalls. According to the regulation of the minister of health of the Republic of Indonesia, pharmacy precursors are prohibited to be sold in retail.

Recommendation

The education may enhance the level of people’s awareness, instead the Indonesian Food and drug Authority (BPOM) reinforce its distribution.

References

1. Winand D. Self-medication: A normal challenge. *J Basic Clin Pharm*. 2013; 28(2): 118-23.
2. Pylipczak, A., Szepietowski, J., & Czapliński, C. Retail Self-medication with antibiotics in Nagasaki City (Japan): a cross-sectional population-based survey. *BMC Res Notes*. 4: 493 (2011).



Toddler Development Data Collection System (SIPERBA) in the Rarowatu District, Bombana Regency

INTERNATIONAL CONFERENCE ON SUSTAINABLE DEVELOPMENT
OF COASTAL AREA RESOURCES BASED ON LOCAL WISDOM
10-11 October 2022

Toddler Development Data Collection System (SIPERBA) in the Rarowatu District, Bombana Regency

Sarimuddin¹, Nurfitriani Ningsi²

Introduction

Bangka Kencana is one of the government's priority programs set by the president of the Republic of Indonesia and is one of the flagship programs of the BKKBN. Bangka Kencana views the family as the backbone of development that focuses on creating a quality family. The government's strategy for the success of the Bangka Kencana program is by reducing the stunting rate. There are several factors that influence toddlers to be stunted including lack of knowledge of mothers about nutritional health before and during pregnancy, malnutrition due to relatively expensive basic necessities, limited access to health services, and lack of clean water and sanitation (Wahyu Iain Susanti, 2019).

The regional government of Bombana Regency through the Bombana Regency Population Control and Family Planning Service (DPRKD) which is an extension of the central government, has succeeded in the stunting reduction program by implementing outreach to family planning. The program is carried out by providing education to pregnant women and parents of toddlers about healthy lifestyles, especially in increasing balanced nutritional intake so that children's growth and development is normal. This method is considered capable of reducing the number of toddlers affected by stunting in Bombana Regency.

The steps to stunting starting in to measure the progress of fetal development for pregnant women, while for toddlers, the progress of the baby's development every month (Rahmatika Febiyani, 2020). Measurement of fetal development is carried out by measuring by measuring gestational age, height, weight, blood pressure in pregnant women. While measuring the development of nutritional intake in toddlers the data collector was carried out by nurses by measuring the age, weight and height of the baby.

So far the system for recording fetal development in pregnant women and toddler development in Rarowatu District still uses the conventional method, namely by recording it in a diary and giving control cards to pregnant women or parents of toddlers (Adnan Fakhriadi, 2021). This method is less effective and efficient because it is easily forgotten (lost) so there is no record of the previous month's data collector. This will have an impact on the difficulty of controlling the progress of toddler development (Rahmatika Febiyani, 2020).

To overcome this, Information Technology innovation is needed through designing a web-based data collector system service that is able to work effectively and efficiently in controlling and managing information in real time so as to facilitate periodic reporting required by stakeholders.

The objective of this study is to design an Application for Toddler Development Data Collection System (SIPERBA) which facilitates the process of recording information on fetal development in pregnant women and the development of toddlers every month so that people no longer need to carry control cards when conducting health checks. This system is also able to provide graphical information on the development of child growth in each village in a month or even per year. This innovation has had a positive impact on stunting data monitoring in the Bombana Regency area, especially the Rarowatu District.

Method



Results



Figure 2. Administrator Dashboard



Figure 3. Toddler Data Collector

System Testing

Table 1. System Testing

No	Test Case	Step/Procedure	Test Results	Pass/Fail
1	Administrator Login	1. Open the SIPERBA application 2. Enter the administrator username and password 3. Click the login button	Administrator can login successfully	Pass
2	Administrator Logout	1. Click the logout button	Administrator can logout successfully	Pass
3	Administrator Add User	1. Click the add user button 2. Enter the user name and password 3. Click the save button	Administrator can add user successfully	Pass
4	Administrator Edit User	1. Click the edit user button 2. Enter the user name and password 3. Click the save button	Administrator can edit user successfully	Pass
5	Administrator Delete User	1. Click the delete user button 2. Click the confirm button	Administrator can delete user successfully	Pass

Conclusion

The Toddler Data Collection System (SIPERBA) application can help the government especially in the Rarowatu District to overcome the problem of controlling data on the health of pregnant women and toddlers by providing access and recording of information to communities affected by stunting in real time through available page access. The admin, in this case the Nutritionist and Midwife, can easily monitor the progress of recording the development of toddlers and pregnant women. In addition, this system is also equipped with statistical information on stunting in Rarowatu District.

Reference

1. Wahyu Iain Susanti. (2019). Pengembangan Sistem Informasi Penyalangan dan Pelaporan Status Gizi Balita (Studi di Kabupaten Gowa). *Survei*, 1(2), 1-6.
2. Adnan Fakhriadi. (2021). Sistem Informasi Penyalangan Balita Anak Di Kabupaten Pangkajene-Andara.
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