PROCEEDING

VOLUME 2 NUMBER 1 2024

THE 2ND MULTIDICIPLINES BOSOWA INTERNATIONAL CONFERENCE (MBIC) 2024

"HARMONIZING KNOWLEDGE FOR SUSTAINABLE TRANSFORMATION"

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UNIVERSITAS BOSOWA
THE INTERNATIONAL OFFICE DEPARTMENT
APRIL 24-25, 2024

PROCEEDING

Volume 2 No. 1 2024

Hybrid International Conference

2nd Multidisciplines Bosowa International Conference (MBIC)

"Harmonizing Knowledge for Sustainable Transformation"

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TITLE:

PROCEEDING: Volume 2 No. 1 2024

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E-ISBN: 978-81-982137-7-8 November 30, 2024

EDITORS:

PUBLISHED BY:

CAPE FORUM
OF BY AND FOR YOUR TRUST PUBLICATIONS
Kaniyakumari | Tamilnadu | India
Email: capeforumyoutrust@gmail.com
Website: https://www.Capeforumyoutrust.org

Welcoming Note

Welcoming Note
Prof. Dr. Ir. Batara Surya, ST., M.Si.
Rector of Bosowa University, Indonesia

Distinguished Scholars, Researchers, Academics, and Esteemed Colleagues,

It is with great honor and privilege that I extend a heartfelt welcome to all the esteemed contributors, participants, and readers of the proceedings from the **2nd Multidisciplines Bosowa International Conference (MBIC)**. Under the theme *"Harmonizing Knowledge for Sustainable Transformation,"* this conference has served as a remarkable platform for intellectual exchange, bringing together researchers, academics, and practitioners from diverse disciplines with a shared vision of fostering sustainable development.

At a time when the world faces unprecedented challenges—climate change, social inequality, economic instability, and rapid technological transformation—it is more crucial than ever to seek collaborative, interdisciplinary approaches to address these issues. The theme of this year's MBIC reflects the essence of our collective responsibility as scholars and researchers to harmonize knowledge, ensuring that the solutions we develop are comprehensive, inclusive, and sustainable.

Bosowa University is proud to host this conference, which not only provides a platform for exchanging innovative ideas but also encourages critical reflection on how academic research can

contribute to real-world solutions. By bringing together experts from a wide range of fields—including science, engineering, social sciences, business, and the humanities—the conference promotes a holistic view of sustainable transformation, emphasizing that the solutions of tomorrow will be forged through collaboration and the convergence of diverse perspectives.

The papers presented and discussed at this conference, now compiled in these proceedings, reflect a wide array of cutting-edge research and thought leadership. The topics range from technological innovations to sustainable economic models, from educational reforms to environmental stewardship. Each contribution represents a critical step toward understanding the complexities of sustainability in a globalized world and highlights the innovative thinking required to address these challenges.
These proceedings serve as a testament to the conference's success, offering a valuable resource for academics, policymakers, and practitioners alike. They embody not only the hard work and dedication of the contributors but also the vibrant discussions and exchanges that took place during the conference sessions. I am confident that this publication will not only inspire further research but also provide actionable insights that can influence policies, practices, and innovations toward a more sustainable future.

To the organizing committee, keynote speakers, and all participants, I express my deepest appreciation for your commitment to making this event a success. Your efforts have ensured that the 2nd MBIC continues to build on the legacy of interdisciplinary collaboration, and I am grateful for your contributions to the advancement of knowledge.

I also wish to extend my sincerest thanks to all the authors whose work has enriched this conference and to the reviewers who helped maintain the high quality of the research presented. Your dedication to advancing knowledge and contributing to the global discourse on sustainability is invaluable.

As we reflect on the discussions and outcomes of this conference, I encourage all of you to continue pushing the boundaries of your respective disciplines, fostering cross-disciplinary collaborations, and embracing innovative solutions to create a more sustainable, equitable, and prosperous world for future generations.

Once again, welcome to the proceedings of the **2nd Multidisciplines Bosowa International Conference**. I look forward to seeing the ongoing impact of this important work and am confident that it will inspire meaningful change in academia and beyond.

Thank you, and let us continue working together in the spirit of knowledge and sustainability.

Warmest regards,

Prof. Dr. Ir. Batara Surya, ST., M.Si.
Rector,
Bosowa University, Indonesia

Preface

We are pleased to present the proceedings of the **2nd Multidisciplines Bosowa International Conference (MBIC)**, held under the theme *"Harmonizing Knowledge for Sustainable Transformation."* This international conference, hosted by Bosowa University, brought together scholars, researchers, and professionals from diverse disciplines and geographical locations, all united by a shared commitment to fostering sustainable development through the harmonization of knowledge.

In a rapidly changing world facing complex global challenges such as climate change, social inequality, technological disruption, and economic instability, the need for multidisciplinary collaboration has never been more critical. The MBIC aims to provide a platform for intellectual exchange, where ideas from various fields intersect to create innovative and comprehensive solutions for a sustainable future.

The theme of this year's conference, *"Harmonizing Knowledge for Sustainable Transformation,"* underscores the importance of integrating insights from different disciplines to address the multifaceted issues facing our world today. The contributions found in these proceedings reflect the diversity of thought and research that were presented during the conference. From engineering and environmental studies to social sciences and education, these papers explore innovative approaches to sustainability, offering valuable insights that can contribute to meaningful global transformation.

We would like to express our gratitude to the esteemed keynote speakers, presenters, and participants who contributed their

knowledge and expertise to make this conference a success. Special thanks also go to the organizing committee and reviewers for their dedication to ensuring the high quality of submissions. Without their efforts, the success of this conference and the production of these proceedings would not have been possible.

The papers presented in this collection are not only a reflection of the valuable research discussed during the conference but also a testament to the ongoing efforts of the academic community to contribute to a more sustainable and equitable future. We hope that the work compiled here will inspire further research, foster interdisciplinary collaboration, and provide practical insights for tackling the challenges of sustainable development.

As we face an uncertain future, it is crucial that we continue to foster dialogue, exchange knowledge, and work collectively toward solutions that benefit not only our generation but also those to come. The **2nd Multidisciplines Bosowa International Conference** is just one step on this journey, and we look forward to the continued impact of this work.

We hope you find the content of these proceedings insightful and inspiring as you pursue your own research and professional endeavors.

Sincerely,
The Editorial Committee
2nd Multidisciplines Bosowa International Conference (MBIC)
Bosowa University, Indonesia

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PROGRESS AND CHALLENGES IN IMPLEMENTING *'SMOKESTACK-FREE INDUSTRIAL CITY'* AS A SUSTAINABLE DEVELOPMENT CONCEPT IN PAREPARE CITY

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ABSTRACT

Transition to Sustainable Development Goals (SDGs) represented a comprehensive approach to development concept. Indonesia, committed to these objectives, faces the task of harmonizing national and regional plans regarding enactment of Law No. 32 of 2004 on Regional Autonomy, that allows regional governments to tailor development policies to their specific contexts. In Parepare City, Mayor Taufan Pawe embraced this autonomy, advocating for a "Smokestack-Free Industrial City" as development concept. This research investigates the concept's idea, progress, and challenges, using a case study approach. Data collection methods included documentation, archival records, and direct observation from November 2023 to April 2024. Results reveal that the concept is align with SDG's spirit, bringing significant advancements in healthcare, education, tourism, and public services sectors, with several challenges encountered in the process. Overall, Parepare City's experience provides valuable insights into the practical application of sustainable development concepts at the local level.

KEYWORDS

Development, Development Communicator, Policy, Regional Autonomy, Sustainable Development

1. INTRODUCTION

After the Millennium Development Goals (MDGs) ended in 2015, the world then entered the phase of Sustainable Development Goals (SDGs), which will last until 2030. These SDGs consist of 17 targets covering various aspects of human life, ranging from poverty, hunger, health, and prosperity, to social issues such as gender equality, clean water and sanitation, climate

action, flora and fauna preservation, economic growth, clean energy, and responsible consumption and production. These 17 focuses aim to preserve life, not only for humans but also for the environment and the fauna within it. Right now, as one of the countries adopting this policy, Indonesia has successfully implemented around 70 percent of the MDG's targets. Moreover, regarding the Sustainable Development Goals (SDGs), it is mentioned on the setkab website that the UN has assessed Indonesia as one of the countries with the most progressive target achievements among upper-middle-income countries, reaching 62% of the 224 indicators. However, SDGs also brings forth an increased challenges for Indonesia, one of them is related to aligning national and regional action plans to ensure the implementation of this sustainable development goals.

This dynamic is partly related to the enactment of Law No. 32 of 2004 on Regional Autonomy. Since the issuance of this law, regional governments or cities in Indonesia have had greater authority to carry out development processes. Article 14 Paragraph 2 of the law states that regional governments have the capacity to optimize community welfare according to the conditions in the regions they lead, while Article 14 Paragraph 1 categorizes various fields under the authority of regional governments, ranging from authority for development control planning, urban spatial planning, investment, to services to the community in the fields of health, education, and various other basic services.

It cannot be denied that with the diverse characteristics of Indonesia's regions, especially in terms of local culture and resources (both natural and human), the Regional Autonomy Law certainly provides several advantages to regional governments. Among these advantages is the opportunity for regional governments to determine development policies that are suitable for the conditions of their regions, making the management of regional resources simpler and more efficient. This approach aligns with the postulate that regional governments are more aware of the potential and capabilities of their regions.

This regional autonomy policy has been utilized by regional leaders to formulate distinctive development, one of whom is Mayor of Parepare for the

2018-2023 period, Dr. Taufan Pawe. This can be seen during the Parepare City elections in South Sulawesi in 2018, when he expressed his desire to develop Parepare into a "Smokestack-Free Industrial City". This is a utilization of regional autonomy in the form of determining the development concept of their region, where the concept essentially focuses on three areas of service, namely health, education, and tourism, to make Parepare an industrial city with minimal environmental pollution. So, when Taufan Pawe was re-elected for a second term, this concept was then embodied in the RPJMD or Medium-Term Development Plan for Parepare City in 2019.

Furthermore, in Parepare Regional Regulation (*Peraturan Daerah*) No. 1 of 2019 regarding the RPJMD of Parepare City, it is explained that this RPJMD is a structured part of the National Development Plan (RPN) and leads to the Long-Term Regional Development Plan (RPJPD) of Parepare City. In the introduction, the Mayor of Parepare stated that this RPJMD document is subsequently used as guidance and a focal point in addressing both the arrangement of development efforts in Parepare City and all development stakeholder elements to achieve the vision of Parepare as a "Smokestack-Free Industrial City" that is advanced, independent, and has character, with a perspective of rights and basic services to the community. This development paradigm of Taufan Pawe was later referred to by Professor Marsuki, a senior economist at Hasanuddin University, as cited on the Parepos news site as an environmentally friendly economic development approach, which aligns with the sustainable development strategy declared globally or the Sustainable Development Goals (SDGs).

The development concept of "Smokestack-Free Industrial City" in Parepare is appealing to study because until now, there aren't many local governments in Indonesia that have integrated the concept of Sustainable Development into the context of development in their areas. Thus, this research has problem formulation regarding how the development concept of the "Smokestack-Free Industrial City" is implemented during Taufan Pawe's administration, the extent of the implementation, and what challenges are faced in the process of implementing that concept.

2. RESEARCH METHODOLOGY

This research utilizes the case study research method by Robert K. Yin, due to the inherent limitations between the phenomenon under study and its context, which may not always be clear or definite. Therefore, researchers need to employ various sources of evidence and appropriate methods to collect and analyze data objectively. The main objective of the research is to gain a deeper understanding of the concept of "Smokestack-Free Industrial City" in Parepare city, map the progress of implementing this concept, and identify challenges encountered in the implementation process. The components of this research design, similar to other case study research designs, can be outlined as follows:

1) Research questions with a "how" pattern seeking explanations of how or why a phenomenon occurs. "How" questions aim to understand the processes or mechanisms involved in a phenomenon, in this case, the progress of implementing the concept of "Smokestack-Free Industrial City" in the context of Sustainable Development Goals in Parepare city, and the challenges faced in this process.
2) Propositions or statements resulting from data analysis and research, serving as temporary answers to the research questions posed. These propositions are then used as guidelines for further testing and validation of the theory or concept. The research proposition is that the concept of "Smokestack-Free Industrial City" is a development model that supports Sustainable Development Goals.
3) Unit of analysis, which in research is the object that is the focus or center of the researcher's attention in studying a phenomenon. In this research, the unit of analysis is the concept of "Smokestack-Free Industrial City" and its implementation in development in Parepare city.
4) After the researcher obtains data from the field, the next step is to analyze the data. The data analysis process involves testing the propositions made earlier with field data. This aims to determine whether the obtained data can support or reject these propositions. Additionally, the data analysis stage involves organizing, coding, and interpreting data to generate significant findings that can answer the research questions posed.

5) Criteria for interpreting findings, which are rules or standards used by the researcher to evaluate and interpret the findings or results of the research. These criteria must be in line with and relevant to the propositions and research questions established earlier

Types of Data

The types of data used in this research consist of 2 types:

a. Primary Data

Primary data is obtained from field observations, in this case, observations of development work in Parepare city during Mayor Taufan Pawe's tenure.

b. Secondary Data

This type of data has been collected or published by others previously. This data can be used as additional sources of information in the research. Secondary data sources include academic publications, reports, databases, and other official documents. Secondary data is used to provide a broader perspective on the research topic and support or reinforce findings from primary data. In this research, secondary data sources include various reference books, scientific articles, reports, and other relevant sources of information.

Data collected from different sources are then combined and analyzed together to produce more credible and valid findings.

Data Collection Methods

Data collection methods in this research include:

1) Documentation such as legislation documents, memos, correspondence, agendas, meeting or conference reports, written reports, administrative documents, proposals, research, official evaluations, clippings, news, or media articles, both online and mass media.
2) Archival records, which can be digital data such as service or organizational records, maps or geographical characteristic charts, lists of names and commodity goods or services, as well as survey information in the form of recordings or censuses.

3) Direct observation is an accumulation of data obtained by directly observing an object or activity in progress. In the context of research related to Parepare city development, direct observation is conducted by observing development activities such as building construction, roads, city parks, and other public facilities.

Time And Place of Research

This research is conducted between August 2023 to March 2024, located at Parepare City in South Celebes Province of Indonesia.

3. RESULTS AND DISCUSSION

Development as a concept can be defined as any effort undertaken by society to improve their lives. If development is often interpreted as an effort to bring about positive change, an improvement from a previous state, it is reasonable to assume that development is a form of growth. Alexander argues that development as a concept encompasses mechanisms of change that involve the entire social structure, such as politics, economics, culture, technology, and education. Here, development is seen as a mechanism of alteration designed to change or enhance various aspects of life in society for the better. Siagian further states that development can be viewed as an effort or series of growth and changes in a country towards modernization in the context of nation-building, and Bratakusumah adds that development cannot be seen as something static because the concept has different meanings for different individuals or different regions.

Tikson further views development as intentional changes in aspects such as economics, social, and cultural, through various designs and strategies towards desired conditions. Changes or transformations can be seen in economic sectors through growth or increased production in the industrial sector, while in the social field, it can be seen, for example, in the increasingly equitable access to socio-economic resources such as health, adequate housing, clean water, and participation in policy-making processes concerning public interests. Cultural changes can be seen in the increasing spirit of nationalism, transition from traditional institutional structures to more

modern and organized organizations. Here, development touches on all aspects of community life, from the smallest (micro) to the largest (macro) level. Thus, we can view the essence of development as a change in aspects of human life, not only in the external environment but also in human beings themselves. Development is vital not only because it changes the conditions and environment of human life but also to change human beings themselves. Development enables people to meet their needs, liberate themselves from colonization or slavery, and plan for a better future.

In Indonesia, according to the Ministry of Finance website, the goal of development according to the 1945 Constitution is to create peaceful and stable living conditions for the Indonesian people, based on the values of Pancasila and the 1945 Constitution. The main goal is to achieve equality and prosperity for all individuals, both materially and spiritually. This is realized through an independent, united, and sovereign Unitary State of the Republic of Indonesia. It is further explained that national development is the implementation of Pancasila, and is conducted together by the government and society, with society as the main actor and the government having the duty to guide, maintain, and foster a supportive atmosphere.

Undoubtedly, the most prominent actor in development, although not the only one, is the state or government. In the context of state, the government is a vital actor because every decision it makes has an impact that affects the entire population in its territory. The government is the main actor in the development process, responsible for ensuring that the development process follows the rules to achieve its goals. This development process is dynamic, in the sense that although the development concepts applied between countries may be the same, the results or outputs of development may vary in each country. Variables that can influence this can be diverse, and one of them is the role of actors in the development process.

With the existence of regional autonomy, James W. Fesler and AF. Leemans, as quoted by J. Kaloh, state that regional leaders must see regional autonomy as an effort to regulate the rights and obligations of governance to be harmonious and focused on the demands of the community's needs, or in other words, regional autonomy is only an instrument or tool to achieve goals,

not interpreted as a special territory or territory at the local level. The addition of regional authority resulting from regional autonomy must then be viewed as an additional obligation for regional heads to be regulated with the principles of justice, democracy, and the greatest possible prosperity of the people. In this context, regional leaders are required to have the ability to manage and utilize the authority they have properly and appropriately to build and empower the communities living in their areas. Regional heads as the top leaders must have a proactive attitude and quality leadership to mobilize the community to play an active role in the development process, increase the spirit of civil servants as their subordinates, and be able to be not only facilitators or organizers but also creators and innovators.

This regional autonomy is then realized in the concept of the "*Smokestack-Free Industrial City*" proposed by the elected Mayor of Parepare for 2 periods, Dr. Taufan Pawe, as the basis for regional development in Parepare city. In his interview on the *Indonesia Siang* talk show on the national television station MNC News on Wednesday, November 24, 2021, Taufan Pawe said that in his second term of office, he intends to implement the concept of a *Smokestack-Free Industrial City* in Parepare city as a continuation of his first term of office, which focused on strengthening basic rights and services for the people of Parepare city. He also emphasized that the concept of smokestack-free industries implies that the prioritized industries are not in the production sector of goods but in the fields of health services, education, and tourism. The reason behind the selection of these three sectors, according to Taufan Pawe, is because the city he leads does not have adequate natural resources, both mining and energy, so he is trying to optimize other potential resources owned by the city. Thus, the realization of Parepare city as a smokestack-free industrial city will also support the main goal of making Parepare city not just a transit city but also as a destination city.

Although lacking in mining natural resources, Parepare city does have several potential advantages to be utilized in the development process. With an area of only 99.33 km3 and a population of about 150 thousand people, but its geographical location bordering the Makassar Strait as a boundary

between Sulawesi Island and Kalimantan Island makes inter-island transportation one of the main services in this city. Parepare city is also bordered by Pinrang Regency to the north and Sidrap Regency to the east, which are cities that produce staple goods such as rice and animal products. Thus, Parepare city is the gateway to the northern region of South Sulawesi, and has been a shipping hub for PELNI maritime transportation from South Sulawesi to Kalimantan, Java, NTT, and NTB. The flow of goods and people from border cities such as Pinrang and Sidrap to Parepare city is also dominant through the port of Parepare city. Therefore, the location of Parepare city enables it to be a connecting city for the transportation of goods and services from northern South Sulawesi to other islands in Indonesia.

Furthermore, Parepare city also has many available lands that can be utilized, both for warehouse areas or for other economic purposes. According to data from Central Statistical Agency (BPS), the area used for purposes other than agriculture in 2020 was recorded at 2,548 hectares or 25.65 percent of the total land area of Parepare city. The percentage of non-agricultural land in 2020 with the highest area is Bacukiki District covering an area of 1,237 hectares (48.55 percent), followed by Ujung District with an area of 234 hectares (27.51 percent), Soreang District with an area of 701 hectares (14.76 percent), and West Bacukiki District with an area of 376 hectares (9.18 percent).

This development model, as mentioned by Mahadiansar et al, falls into the regional development model, which aims to realize regionally autonomous development programs related to regional rights and authorities according to their needs. Mahadiansar further explains that this regional development model can be interpreted as an effort to equalize regions where development in these areas has not been maximally implemented due to many considerations that must be taken into account to ensure that regional development has high quality and meets the desires of the community.

As for the legal implementation of this concept, it began with the inclusion of this concept in the Medium-Term Development Plan of Parepare City or RPJMD. In the introduction to the RPJMD document, it is stated that this document will be used as a guideline and reference in organizing the

development planning system in Parepare city and all development actors to create unity of thought, unity of plans, and actions to achieve the Vision of "REALIZING PAREPARE CITY AS A SMOKESTACK-FREE INDUSTRIAL CITY WITH A BASIC RIGHTS AND BASIC SERVICE-ORIENTED APPROACH TOWARDS A PROGRESSIVE, INDEPENDENT, AND CHARACTER-BASED CITY". In the same document, it is mentioned that the smokestack-free industry is realized by presenting infrastructure development in the fields of health services, education, and tourism, including: the health services sector located in coastal areas with the concept of medical tourism and in highland dimensions by presenting the concept of educational service process industries with the presence of the Habibie Institute of Technology, while the combination of the three dimensions is expected to become a destination industry or tourism.

The concept of "*Smokestack-free Industrial City*" is one form of development concept that aligns with the Sustainable Development Goals (SDGs). The SDGs concept itself has several developments from the Millennium Development Goals (MDGs), as mentioned by Mayarni *et a*l, including a new mindset that the planet Earth is the limit of human life, and everything in the world is a cycle with cause-and-effect relationships. Therefore, the Sustainable Development Goals (SDGs) aim to achieve the well-being of society or human well-being. Furthermore, there are new goals with measurable indicators, especially in the economic and environmental dimensions, as well as explicit formulations regarding governance and means of implementation. The alignment between the Sustainable Development Goals and the concept of "Industrial City Without Smokestacks" can be seen in this city's development priority that covers several sectors that are considered as minimal-pollution such as

a. Healthcare Services Sector

In this field, there are several development outcomes initiated by Taufan Pawe. He launched the construction of the dr. Hasri Ainun Habibie Regional Hospital with a medical tourism concept. Located on the coast of Tonrangeng, the construction of the hospital began in 2015 and was

inaugurated in 2020. It is expected to attract patients from outside Parepare city and support the medical tourism industry, similar to what is found in Singapore. Additionally, Taufan Pawe also enhanced the quality of the Type B Andi Makkasau Regional Hospital by equipping it with various medical equipment facilities to provide better and diverse healthcare services. This is in addition to other healthcare services such as the *112 call-center*, which provides free ambulance transportation for emergency patients, as well as improvements in healthcare facilities for the community, such as in the Mattirotasi community health centers (puskesmas).

b. Education Sector

The most prominent development outcome from Taufan Pawe's regime is the establishment of the BJ Habibie Institute of Technology. Established based on Presidential Regulation Number 152 of 2014 concerning the Establishment of the Bacharuddin Jusuf Habibie Institute of Technology (State Gazette of the Republic of Indonesia in 2014), this higher education institution became the fifth Institute of Technology in Indonesia and the first Institute of Technology owned by a regional government outside of Java Island. The BJ Habibie Institute of Technology officially commenced operations and opened admissions for new students in 2021. The presence of this institute complements several other higher education institutions that's already exist, such as the Parepare State Islamic Institute, Parepare Muhammadiyah University, and the Andi Sapada Institute of Business and Social Sciences.

c. Tourism Sector

In the field of tourism, Taufan Pawe's development efforts have been focused on enhancing Parepare's tourism potential. One notable project is the revitalization of Pantai Tonrangeng (Tonrangeng Beach), which aims to attract tourists and stimulate economic activities in the area. Additionally, infrastructure improvements have been made to support tourism, including the development of recreational facilities and the beautification of public spaces along the coast. These initiatives align with the vision of transforming Parepare into a tourist destination and promoting sustainable tourism practices.

Furthermore, Taufan Pawe embarked on rehabilitation projects for various tourist attractions, such as the Jompie City Park, aimed at supporting cultural tourism. As one of the best city parks in South Sulawesi, Jompie City Park received a budget of IDR 9.8 million for the development of boulevards, pergolas, parking areas, guard posts, greenhouses (for ornamental and dry plants, and seedlings), seedling infrastructure, nursery gardens, flower beds, viewing decks, composting facilities, information boards, and signage. Apart from being a tourist destination, Jompie City Park also serves as a carbon sink, playing a crucial role in climate mitigation and contributing to the target of reducing greenhouse gas emissions by 29% by 2030.

Taufan Pawe then constructed the Cempae Pavilion located within Teluk Parepare. Spanning an area of 6,000 m2, this tourist attraction is equipped with various facilities such as outdoor fitness areas, food courts, fishermen's docks, community tribunes, a sky bridge, and other amenities aimed at boosting the local economy. He continued his efforts by constructing The Floating Mosque and its courtyard as part of halal tourism, renovated the Gelora B.J. Habibie Stadium that designated as the home base for the PSM Makassar football team as part of sports tourism which through ticket sales revenue sharing was able to generate income equivalent to 10% of the total ticket sales. Additionally, besides building infrastructure for tourism, Taufan Pawe also organized annual tourism events such as the Salo Karajae Festival, which has grown into a national-scale event in Indonesia. Celebrated along the riverside at the *Tonrangeng Riverside* tourism area, this festival has been held for 14 years since its first time in 2010.

d. Public Services Sector

In the governance sector, Taufan Pawe made a breakthrough by creating an e-governance ecosystem through the utilization of information and communication technology. In Mayor Regulation (Perwali) No.11 of 2018 concerning the Master Plan for Information and Communication Technology of the Parepare City Regional Government, it is stated that the regulation has three objectives. Firstly, it aims to create bureaucratic activities and public services that are clean, transparent, and capable of effectively responding to change demands, thereby producing excellent services in line with the

development vision of Parepare City. Secondly, it seeks to enhance the quality of public services through the effective utilization of information and communication technology in the processes of the Parepare City Regional Government by optimizing e-government services comprehensively. Thirdly, it aims to ensure the integration of data/document management and electronic information systems to facilitate access to government information and services.

To support public service infrastructure, Taufan Pawe also constructed the Public Service Mall, which officially commenced operations on August 22, 2022, to facilitate a more convenient and centralized public access to related services. This public service office serves as a branch for several government agencies, including the Department of Population and Civil Registration, the Public Prosecutor's Office, the police, the Ministry of Religious Affairs, the civil registry office, the Ministry of Law and Human Rights, as well as services such as banks, vehicle registration offices, and health and employment social security agencies.

Furthermore, under Taufan Pawe's leadership, the Parepare City government embarked on the construction and continuation of supporting infrastructure development, such as those related to urban space utilization, by accelerating the development of the Parepare Industrial and Warehouse Zone and its Surroundings (KIPAS). The development of KIPAS began in 1998 as part of the Parepare City Spatial Plan (KAPET) and progressed alongside the designation of the Ajattappareng Zone as a National Strategic Area (KSN) aimed at stimulating economic growth through the establishment of economic zones. Parepare City, particularly the KIPAS area, was subsequently recognized as a Provincial Strategic Area (KSP) according to the South Sulawesi Provincial Spatial Plan (2009-2029). The Parepare City government itself designated KIPAS as a City Strategic Area (KSK) with the main function of warehousing, as stipulated in Parepare City Regional Regulation No. 1 of 2021 concerning the Spatial Planning Plan (RTRW) of Parepare City. Taufan Pawe also improved transportation routes, for example, by constructing the Twin Bridge in the Lumpue village, Bacukiki

Barat district, which facilitated road users from outside the city to reach locations such as Andi Makkasau Regional General Hospital and Gelora B.J Habibie Stadium.

The achievements of Parepare City in development are considered remarkable, leading to numerous awards. As cited from the Parepare City Regional Development Planning Agency website, the number of awards received by the Parepare City government drastically increased from 6 in 2014 to 173 in 2020. This is attributed to various improvements in Parepare City, such as the increased economic growth from 6.33 percent in 2014 to 6.65 percent in 2020, which helped reduce Parepare's inflation rate from 9.38 percent in 2014 to 2.45 percent in 2020. The data also shows a decrease in Parepare's poverty rate from 5.88 percent in 2014 to 5.26 percent in 2020. Furthermore, Parepare City's Gini Index also exhibited a stable decline from 0.423 percent in 2014 to 0.350 percent in 2020, and the per capita income of Parepare residents increased from 32.39 million in 2014 to 49.8 million in 2020. Parepare's Gross Regional Domestic Product (PDRB) also increased from around 4.428 trillion in 2014 to 7.23 trillion in 2020.

Parepare's Human Development Index (HDI) also showing an increased from 75.66% in 2014 to 77.62% in 2020, similar to labor force participation that are increasing from 60.62% in 2014 to 63.27% in 2020, while the open unemployment rate in Parepare decreased from 7.06% in 2014 to 6.42% in 2020. All of these had a positive impact on the satisfaction of Parepare residents, from 75.32% in 2014 to 94.25% in 2020. The comparison can be seen in the following table:

Table 1. Comparison of Development Index Improvement

Indicators	2014	2020	Change
Economic Growth (%)	6.33	6.65	+0.32
Inflation (%)	9.38	2.45	-6.93
Poverty Rate (%)	5.88	5.26	-0.62
Gini Index	0.35	0.423	-0.073
Per Capita Income (million IDR)	32.39	49.8	+17.41

GDP (trillion IDR)	4.428	7.23	+2.802
HDI (%)	75.66	77.62	+1.96
Labor Force Participation (%)	60.62	63.27	+2.65
Citizen Satisfaction (%)	75.32	94.25	+18.93
Open Unemployment Rate (%)	7.06	6.42	-0.64

Source: Compiled data from the Central Bureau of Statistics of Parepare City

Furthermore, the economy of Parepare city has also experienced growth. This is attributed to several sectors that are experiencing an increasing trend. The sector with the highest growth in Parepare were the government administration, defense, and mandatory social security, with an increase of 14.44 percent, followed by the transportation and warehousing sector with an increase of 8.98 percent. The manufacturing sector also experienced growth of 8.23 percent, while other service sectors and the last sector experienced growth of 7.94 percent and 7.54 percent, respectively. This had a positive effect, resulting in Parepare's economics growing above 5 percent over the course of five years until 2020.

How the implementation of “Smokestack-free Industrial City” concept in Parepare city progressing rapidly were influenced by one particular factor, which was the leadership quality of its city’s Mayor. Local leaders, as key communication actors, play a crucial role in the development process. According to Nova C. Quebral (as cited in Cangara), they embody the characteristics of development communicators, being individuals who (a) comprehend the development process, communication dynamics, and the environmental context in which communication and development intersect, (b) possess communication skills and knowledge of development issues to effectively convey information, (c) internalize new values, enabling them to effectively transmit their knowledge to others, (d) have firsthand knowledge and understanding of the demographics likely to adopt innovations, and (e) demonstrate high commitment and integrity in advancing human development. In addition to these criteria, local leaders also hold an advantage over other communicators due to their authority in decision-making of the development policies.

In several studies, it is evident that the role of leaders (which in this context are the local government heads) significantly dominates government activities, thus the implementation of appropriate development concepts for the region will be greatly influenced by the leadership quality of the local government head. Research by Rima Vien Permata Hartanto shows how the leadership of local government heads (in this case, the mayor of Surakarta) has a significant impact on building a strong governance system that supports development programs in the city of Surakarta. It also indicates that the role of local government heads in development, especially in reducing poverty and unemployment rates, is crucial. In various other studies, such as those conducted by Rasbin, the programs implemented by local government heads in Yogyakarta and Malang have successfully reduced poverty and unemployment rates. Examples includes the Family Report program, Segoro Amarto Movement, KUBE, and CSR programs from several companies in Yogyakarta. The research findings of Marthalina in Tangerang Regency also indicate that local governments play a significant role in reducing poverty through the implementation of 25 cross-agency programs. Additionally, research by Cahyo Hatta Murtyoso on the potential of flagship products as a solution to poverty and unemployment in Tasikmalaya City, West Java, highlights the importance of mapping the potential and advantages of regions by local governments.

It is worthy to note that in its pursuit, Parepare city encountered a series of formidable challenges. Foremost among these obstacles is the perennial issue of insufficient funds for development initiatives. Despite the city's aspirations for progress, the scarcity of financial resources has impeded the implementation of critical projects aimed at advancing sustainable development goals. Several development programs such as the Regional Hospital Dr. Hasri Ainun Habibie, BJ Habibie Institute of Technology Campus, Cempae Pavilion, and the renovation of Gelora BJ Habibie Stadium have experienced delays due to the lack of funds available to the local government. This is the result of insufficient funding from the Parepare City Regional Budget (APBD), which are heavily relying on funds from the Central Government. An alternative to address this issue is to seek funding from the

private sector through investments. However, there is still a minimal awareness among investors regarding the potential of Parepare city, resulting in few expressing interest in investing in its development. This lack of investment perpetuates the cycle of stagnation and hampers progress towards realizing the vision of a thriving, sustainable industrial hub.

Furthermore, challenges arise from the resistance of certain segments of society who do not fully grasp the concept, thus feeling reluctant to support or participate in it. Without active involvement from residents, decisions affecting the city's future trajectory lack the necessary support and legitimacy from those directly impacted. This disconnect between the government and its citizens undermines the effectiveness and inclusivity of development efforts. To address these challenges, it heavily relies on the efforts of the Parepare City government itself. On another front, challenges also emerge from the by-products of the development concept, such as the issue of waste, particularly plastic waste generated by the food and beverage industry. Managing and mitigating the impact of these by-products on the city's ecosystem present additional hurdles to overcome in the quest for sustainable development.

4. CONCLUSION

In conclusion, the concept of development encompasses intentional efforts aimed at improving various aspects of society's well-being, ranging from economics and social welfare to cultural and environmental sustainability. It is a dynamic process that involves intentional changes and growth across multiple sectors, including healthcare, education, tourism, and public services. In Indonesia, the goal of development, as outlined by the Ministry of Finance, is to create peaceful and prosperous living conditions for all Indonesians, based on the values of Pancasila and the 1945 Constitution. This involves achieving equality and prosperity for all individuals, with the government and society working together towards these goals. The implementation of development initiatives often relies heavily on the leadership of local government officials, who play a crucial role in shaping policies and strategies to meet the needs of their communities. In the case of

Parepare city, the concept of a "*Smokestack-Free Industrial City*" proposed by Mayor Taufan Pawe exemplifies how visionary leadership can drive innovative approaches to development. Through investments in healthcare, education, tourism, and public services, Parepare has seen significant improvements in various socio-economic indicators, including economic growth, poverty reduction, and citizen satisfaction. These achievements underscore the importance of effective leadership in driving sustainable development at the local level.

Overall, the case of Parepare city serves as a testament to the transformative power of development when coupled with strong leadership, community engagement, and strategic planning. As Indonesia continues its journey towards achieving national development goals, the experiences of Parepare offer valuable insights into effective approaches for fostering inclusive and sustainable growth. On the other hand, Parepare government still have several homework to do. It needs to intensify efforts to find and persuade potential investors to invest in the city, both through official forums and personal approaches. Without robust promotion and incentives, the city fails to attract the necessary capital to drive economic growth and infrastructure development. They also need to enhance the quality of community participation, especially in disseminating information about the concept and incorporating the aspirations of the people, such as through the Musrenbang (Development Plan Deliberation), and come up with the alternative solution to reduce waste, especially plastic waste, emerging as by-product from supporting industries such as F&B.

In confronting these challenges, Parepare must devise strategic solutions that address the root causes while fostering collaboration among stakeholders. By mobilizing resources, engaging communities, promoting investment opportunities, and implementing sustainable practices, Parepare can surmount these obstacles and advance towards its goal of becoming a model *Smokestack-Free Industrial City*.

5. STATEMENT

With humility, we extend our utmost appreciation to all parties who have provided invaluable support in completing this research article. Our heartfelt thanks go to the Parepare City Government and related agencies for granting extraordinary permission and support throughout the research process. We also wish to express gratitude to the directors of Andi Makkasau Regional General Hospital of Parepare City and dr. Hasri Ainun Habibie Regional Hospital for their assistance and facilities, which greatly aided in the execution of this research. Not to be forgotten, we express our gratitude to the management of BJ Habibie Stadium for their hospitality and willingness to provide a venue for our research activities. And of course, our deepest gratitude goes to the people of Parepare City as a whole. Without their support and participation, this research would not have been realized effectively.

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THE ROLE OF GOVERNMENT EFFECTIVENESS AND CONTROL OF CORRUPTION TO INEQUALITY IN INDONESIA: A ROAD TO INCLUSIVE GROWTH

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ABSTRACT

This study examines the impact of government effectiveness and control of corruption on income inequality in Indonesia between 2011 and 2022. The Ordinary Least Squares (OLS) technique was used to estimate the influence of variables, with normality, multicollinearity, and autocorrelation tests included to obtain guaranteed robustness for the multiple regression model. The findings of this study indicate that the variables of government effectiveness and control of corruption have a negative and significant influence on income inequality, both partially and simultaneously. These findings demonstrate that efforts to promote inclusive growth, by reducing income inequality, requires improving institutional quality by increasing government effectiveness and combating corruption.

KEYWORDS

Government Effectiveness; Control of Corruption; Income Inequality; And Institutional Quality.

ABSTRAK

Studi ini mengkaji pengaruh efektivitas pemerintahan dan pengendalian korupsi terhadap ketimpangan pendapatan di Indonesia antara tahun 2011 dan 2022. Teknik estimasi *Ordinary Least Squares* (OLS) digunakan untuk memperkirakan pengaruh variabel, dengan menyertakan uji normalitas, multikolinearitas, dan autokorelasi untuk mendapatkan keandalan model regresi berganda. Temuan penelitian ini

menunjukkan bahwa variabel efektivitas pemerintah dan pengendalian korupsi mempunyai pengaruh negatif dan signifikan terhadap ketimpangan pendapatan, baik secara parsial maupun secara simultan. Temuan tersebut menunjukkan bahwa upaya untuk mendorong pertumbuhan inklusif, dengan mengurangi ketimpangan pendapatan, memerlukan peningkatan kualitas kelembagaan melalui peningkatan efektivitas pemerintah dan pemberantasan korupsi.

KATA KUNCI

Efektivitas Pemerintah, Pemberantasan Korupsi, Ketimpangan Pendapatan, Dan Kualitas Kelembagaan.

1. INTRODUCTION

The problem of inequality is something that is often faced in developing countries, especially in Indonesia. Even though Indonesia has abundant resources and economic growth continues to increase, the level of inequality is still quite high, as seen from the Gini ratio reaching 0.388 in 2023 (Central Statistics Agency, 2024). So the problem of inequality is still an unresolved challenge. The causes of increasing income inequality in recent decades have also attracted much political and academic consideration. The inequality that occurs is not only caused by economic factors but is also influenced by social factors and government governance factors. Moreover, inequality is also seen as a result of changes in democratic structures, laws, taxes, and institutions (Sarkhosh-Sara et al, 2020; Barra et al, 2023).

According to the World Bank, there are six dimensions of Worldwide Governance Indicators (WGI) in measuring government governance, namely government effectiveness, rule of law, control of corruption, political stability and absence of violence, regulatory quality, voice, and accountability. These six dimensions are expected to influence how the government can effectively overcome inequality, especially the dimensions of government effectiveness and control of corruption. As a policy maker, the government has the authority to carry out its obligations to maintain the economic stability of a country to encourage economic growth and create equality. The government must of course have strong institutional quality so that the policies it regulates can run well (Sari and Prasetyani, 2021; Ramadhan and Riani, 2024). The

implementation of decentralization policies is one of the government's efforts to contribute to the creation of equality and governance because with decentralization the community can control government performance. So if the policies used to create equality are misused by certain parties to increase the economic burden on society without paying attention to adequate public services, the public may reject the implementation of these policies.

Corruption refers to a deviation carried out by elites as an abuse of public office for personal gain. Corruption can certainly increase income inequality because it can have a very big effect in reducing the income of poor people compared to the income of rich people. This can also cause a bias in the tax system in favor of the rich, making the tax system regressive, and causing a higher tax burden on the poor (Li, 2000; and Sáenz-Castro and García-González, 2019). Several previous studies have looked at the importance of the quality of government services and controlling corruption in efforts to create economic equality. Research conducted by Barra et al (2023) looked at the relationship between government effectiveness and inequality in Italy, which showed that the negative effect of government effectiveness on inequality only applied to the northern region.

Besides, research conducted by Blancheton and Chhorn (2021) which looked at the relationship between public spending, institutional quality, and inequality in Asia and the Pacific using the average value of the Worldwide Governance Indicators (WGI), found a negative impact of government intervention (measured by government spending) and institutional quality on income inequality. Then, Kyriacou and Roca-Sagales (2014) conducted research looking at income inequality in the region which could cause conflict in the redistribution of resources so one of the improvements is to improve the quality of public services and control of corruption.

Improving the quality of institutions through public services and combating corruption could become noteworthy factors in promoting inclusive growth and creating long-term equality. This is certainly interesting to study further, especially by looking at the effect of the government effectiveness and control of corruption in bringing the scheme of reducing income inequality in

Indonesia, which will be elaborated in this paper. The rest of this paper encompasses methodology, result and discussion, and conclusion.

2. METHODOLOGY

2.1. DATA

The type of data used in this study is time series data for 2011-2022. Data regarding government effectiveness and controlling corruption in Indonesia comes from the Worldwide Governance Indicator (WGI) released by the World Bank. Government effectiveness refers to perceptions regarding the quality of bureaucracy, public services and the government's independence from political pressure in the formulation and implementation of public policies, while control of corruption describes perceptions related to the extent to which public sector power is utilized for personal tendencies/interests, including the practice of petty corruption and grand corruption. These two indicators show perception values ranging from -2.5 (weak) to 2.5 (strong).

Kaufmann et al. (2010) revealed that perception data is important based on three reasons: i) the public and investors use perception data in decision making, for example for investment and the election of state or regional leaders; ii) there are limited alternative data regarding governance data other than perception survey that can be used; iii) perception data approaches field facts and government-related phenomena experienced by the general public. Meanwhile, data regarding income inequality refers to the gini ratio which comes from BPS Indonesia. BPS Indonesia uses consumption expenditure data as a proxy for income collected through the National Socioeconomic Survey (Susenas). The Gini data ratio in this study takes the Susenas results which are released in March every year. The Gini ratio value ranges between 0 (equally distributed) and 1 (unequally distributed).

2.2. RESEARCH MODEL

The data analysis used is multiple linear regression analysis using the Ordinary Least Squared (OLS) technique to obtain estimation results with the smallest residual squared value. In supporting estimates from the OLS technique, model specifications and regression estimation output will go

through several diagnostic tests such as data normality tests, multicollinearity tests and autocorrelation tests, while heteroscedasticity tests are not carried out considering the absence of individual variation. The model specifications applied are as follows.

$$GR_t = \beta_0 + \beta_1 GE_t + \beta_2 CC_t + e_t$$

Where: GR is the Gini Ratio; GE is Government Effectiveness; CC is Control of Corruption; β_0 is a constant coefficient; β1 and β2 are estimated parameters; e is the error term; and t is the year. The hypotheses of this study are: (1) Government Effectiveness (GE) has a significant negative effect on income inequality/Gini Ratio (GR); (2) Control of Corruption (CC) has a significant negative effect on income inequality/Gini Ratio (GR). The process of estimating time series data regression equation models using the Stata 14 application program. This study uses a probability value of alpha (α) = 0.05 (5%), which is the maximum limit of error used as a benchmark. If the significance value of P < 0.05, it means that there is a significant influence between one independent variable and the dependent variable. If the significance value of P > 0.05, it means that there is no significant influence between one independent variable and the dependent variable.

3. RESULT AND DISCUSSION

3.1. RESULT

Based on the statistical summary, it can be observed that the average value of the Gini ratio in Indonesia in 2011-2022 is at the level of 0.396. The figure shows that income inequality is moderate during the observed period. The highest income inequality was 0.413 which occurred in 2013. Apart from that, it can also be observed that the average government effectiveness value was at the level of 0.002 throughout 2011-2022. This illustrates that on average throughout the years of observation, the quality of bureaucracy and public services received a positive assessment, even though it once received a negative impression of up to -0.330 in 2012. Moreover, the average control of corruption was observed at -0.508. In other words, the public tends to perceive that control of corruption in Indonesia is still weak and that the use of power

in the public sector for personal interests is relatively high. The control of corruption value has never even reached a positive position throughout the year of observation, with a maximum score of -0.299.

Tabel 1 Summary Statistics of Variables

Variable	Obs (year)	Mean	Std. Dev.	Min	Max
Gini Ratio (GR)	12	0,396	0,012	0,381	0,413
Government Effectiveness (GE)	12	0,002	0,276	-0,330	0,436
Control of Corruption (CC)	12	-0,508	0,143	-0,756	-0,299

Source: Data Analysis, 2024

Furthermore, Table 2 illustrates the results of OLS regression on the research model. Based on the estimation results, this study's findings indicate that government effectiveness has a significant negative effect on the Gini ratio of 3.47 percent. This means that for every one percent increase in government effectiveness, income inequality will decrease by 3.47 percent. This influence is statistically significant, as evidenced by a critical value of one percent. Additionally, the control of corruption was also proved to have a negative and significant effect on the Gini ratio of 2.07 percent. This demonstrates that every 1 percent improvement in corruption control has a 2.07 percent reduction in income inequality. The determination of the control of corruption variable is observed at a critical value level of 5 percent. The estimated parameters for each independent variable can be classified as having high robustness. This is proven by the small standard error (<0.01). The lower the standard error of an estimate, the more reliable and efficient the resulting parameters are. The notation of the estimation results as in table 2 is as follows.

$$GR_t = 0{,}3859 + (-0{,}0347)GE_t + (-0{,}0207)CC_t + e_t$$

Meanwhile, the estimation results demonstrate that the multiple regression model specification used in this study is relatively robust. This is demonstrated by the Adjusted R-squared value of 0.87 and a critical value of 1%. Government effectiveness and corruption control variables can both explain 87 percent of the income inequality variable, while the remaining 13 percent is explained by variables not observed in the model.

Tabel 2 OLS Estimation and Regression Diagnostic

Dependent: Gini Ratio (GR) Variable	**Coef**	**Std. Err.**	**t**	**P>|t|**
Government Effectiveness (GE)	-0,0347	0,0046	-7,50	0,000
Control of Corruption (CC)	-0,0207	0,0070	-2,95	0,016
Constant	0,3859	0,0028	134,61	0,000
Summary				
Observation		12		
R-squared		0,8958		
Adj. R-squared		0,8727		
Prob>F		0,0000		
Diagnostic				
Normality: GR		0,0725		
Normality: GE		0,2429		
Normality: CC		0,5071		
Multicolliniearity: VIF		1,74		
Multicolliniearity: 1/VIF		0,5741		
Autocorrelation		1,4290		

Robust Standard Error

Source: Data Analysis, 2024

3.2. DISCUSSION

The issue of income inequality is associated with the topic of inclusive growth and has become part of Indonesia's national development agenda. Explicitly, the National Development Planning Agency (Bappenas) has planned development initiatives for 2025 according to the theme "Accelerating Inclusive and Sustainable Economic Growth". In promoting that agenda, reform in good governance becomes pivotal aspects to support the implementation. Rodrik (2005) and World Bank Group (2017) highlight the role of good governance in fostering inclusive economic growth and social well-being.

This study confirms that aspects of institutional quality identified through government effectiveness and control of corruption enable to reduce income inequality. This is in line with the findings of Barra et al. (2023) who tested the relationship between government effectiveness and inequality in Italy using regional mapping and a variety of estimation techniques, such as OLS, Instrumental Variable (IV), and Generalized Method of Moments (GMM) estimation methods. They suggested that improving government effectiveness, including socio-economic regional structures and public service quality, can redistribute income and promote a more equitable distribution of regional wealth in Italy. In the Indonesian context, (Szczepaniak et al., 2022) found a strong negative relationship between government effectiveness and income inequality during the Reformation Era. They utilized autoregressive distributed lag (ARDL) estimation techniques and incorporated economic freedom factors into their model.

Improving operational systems and bureaucratic work efficiency naturally helps to improve government effectiveness. Setiawan and Prasetyo (2023) identified that efficient public service delivery, transparent governance practices, and strong regulatory frameworks are key drivers of the relationship between government effectiveness and income inequality. They also found a significant association between government effectiveness and income inequality using the Indonesian Family Life Survey (IFLS). In accordance with these findings, Sari & Prastyani (2021) revealed that the government effectiveness variable promotes equitable development which has the potential to result in equal income distribution. This was determined by the

ability of state governments to carry out bureaucratic efficiency and provide a good administrative system for the community. A review by Pradana et al. (2023) described the critical role of government effectiveness in promoting social equity and reducing income disparities. Drawing on case studies and policy analyses, they emphasized the need for targeted interventions to strengthen institutional capacity, enhance transparency, and improve service delivery at both the national and local levels.

In addition, this study also affirms that control of corruption has a negative effect on income inequality. This is consistent with study conducted by Iskandar et al. (2018) and Nugroho & Hendarto (2023), which indicate that corruption has an significant effect on the level of income inequality in both the short and long run. The negative impact of corruption is a major economic disaster threatening essential development indicators. Thus, it has the potential to isolate Indonesia from a higher level of equality. Wibowo and Nugroho (2024) emphasized the significance of anti-corruption efforts in promoting a more equitable distribution of wealth and opportunity. Moreover, studies by Soewarno et al. (2024) and Pratama et al. (2023) demonstrated the widespread impact of corruption on income inequality in Indonesia. They explored how corruption erodes public trust, distorts resource allocation, and worsens socioeconomic disparities by survey method. Their findings illustrated the matter for comprehensive anti-corruption strategies and systemic reforms to address the underlying causes of inequality. With concern of financial development, Adams & Klobodu (2016), Law et al. (2014), and Rajan & Ramcharan (2011) in their studies emphasized that control of corruption is an aspect of institutional quality which plays a major role in determining the impact of financial development on income distribution.

4. CONCLUSION

Based on the elaboration of empirical insights and scientific discussion, it is proven that government effectiveness and control of corruption play a pivotal role in shaping income inequality in Indonesia. Strengthening governance institutions, increasing transparency and accountability, and fostering a culture of integrity are important steps to building a more inclusive and just

society. By intensively evaluating the administration system and bureaucracy, it is possible to chart a course for long-term inclusive growth and shared prosperity for all Indonesian people. This study still needs longer year observation and develops a variety of mapping by regions and periods, that could be developed by other studies in the future.

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APPLICATION OF SAFETY AND HEALTH INDICATORS AT WORK AT HEIGHT AS AN EFFORT TO PREVENT WORK ACCIDENTS IN COCONUT TAPPERS (*PENDERES*)

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ABSTRACT

Coconut tappers are often called *penderes* in Indonesia which is closely related to work carried out at the height of the tree. High-altitude coconut tappers workers are known to have a high risk of accidents. Based on data from the Canadian Center for Occupational Health and Safety in 2coco021, more than 42,000 workers fall every year. About 67% of falls occur at the same level as a result of a slip or slide. The remaining 33% falls from heights. The aim of this research is to determine the implementation of work safety and health standards at height as an effort to prevent work accidents among coconut tappers in Wonosobo Regency. This type of research is descriptive qualitative which was carried out from January 2024 to February 2024. The results of this research show that 100% of the 22 indicator points were not carried out by coconut tappers in Wonosobo Regency (22 indicators). The conclusion of this research is that the implementation of work safety and health standards at height as an effort to prevent work accidents among coconut tappers in Wonosobo Regency has not been optimal, seen from its implementation which is only based on the availability of safety harnesses and other equipment, labor and work procedures that are not appropriate.

KEYWORDS

Safety and health indicators for working at height, coconut tapper

1. INTRODUCTION

Working at height is any activity or work activity carried out above the surface of land or water where there is a risk of falling, which could injure, kill or cause property damage to workers in the place of work (Kang, 2022). Crane

work is often exposed to many hazards due to inadequate risk control measures and cannot be considered “appropriate”, as workers are not guaranteed a safe and healthy working environment (ILO, 2021). Coconut tappers is a very difficult and dangerous job because the structure of coconut trees does not have branches and only skilled people can do this job (Agravat et al., 2019), (Mohankumar et al., 2013). Coconut trees have smooth trunks and can reach a height of 30 meters (Asmuji & Wakit, 2021), (Mardiatmoko & Mira, 2018). Coconut tree climbers use abnormal foot and lower leg joint movements and generally do not use any safety equipment (George et al., 2013). The work of coconut climbers is included in the heavy work category because it requires a lot of energy to do it (Dhafir et al., 2021). Coconut sugar presses are at risk of various health problems that affect their productivity and health (Farid et al., 2022). The risk factor for this job is the occurrence of work accidents (Gathright et al., 2006), (Priyanto, 2010).

The Canadian Center for Occupational Health and Safety in 2021-2022, explains that more than 42,000 workers are injured every year due to falls from heights. About 67% of falls occur at the same level as slips and trips. The remaining 33% falls from heights (CCOHS, 2022). Work accidents apart from having an impact on fatalities and material losses for workers and entrepreneurs, also disrupt the comprehensive production process, damaging the environment which will ultimately have a detrimental impact on society (Permatasari, 2021).

The problem of work accidents in the agricultural sector in Indonesia often occurs and is difficult to control. Data shows that 702 coconut tappers in Banyumas Regency were reported to have had accidents in the last five years. Work accidents in coconut harvesters are caused by 5 factors, namely knowledge, availability of PPE, behavior, self-efficacy, and the role of stakeholders (Permatasari, 2021). Data from the People's Welfare of the Banyumas Regional Secretariat from 2017 to October 2019 showed 323 cases of crane fall accidents, 236 crane riders were disabled and 87 of them died (Naresti et al., 2022). Lack of awareness of the use of PPE triggers a high rate of work accidents among workers (Tenriola et al., 2022). Maryam et al.'s research states that using safety equipment such as a date tree climber

device (DTCD) when climbing trees can reduce WMSDs and work accidents (Rafiee et al., 2022). Furthermore, OSHA recognizes that fall protection standards cover both things, namely humans and equipment (safety harness) with SNI standards in protecting workers from falls (OSHA, 2015), (SCBD, 2017).

There is a risk of falls, slips, slips, and material falling from the top of the coconut tree when coconut tappers are tapping coconuts (Tueyeh et al., 2021). Therefore, studying potential dangerous factors that can cause work accidents at height is an important need. Failure to implement an occupational safety and health culture can be the main cause of accidents when working at height (Agustus & Wati, 2023). Other factors causing work accidents falling from heights were found to be a lack of appropriate procedures in their implementation at 33.3%, a lack of supervision and control at 25.5%, and inappropriate work equipment and platforms at 19.6%. If the equipment and platform are not correct, it can result in work accidents. Importantly, the lack of appropriate procedures and guidelines regarding occupational safety and health guidelines is the main cause of accidents (Prasetyo & Widowati, 2022).

Figure 1. A coconut tapper is climbing a coconut tree

Based on work accident reports from a preliminary study on coconut tappers in 4 sub-districts in Wonosobo Regency over the last 5 years, there were 8 cases of work accidents involving coconut palm sap tappers who died

as a result of falling while tapping palm sap on trees. In an accident at a height, the coconut tapper experienced a work accident with the severity of MTC (Medical Treatment Case). In one case, a coconut tapper's fracture occurred while he was moving from the coconut tree trunk to the manggar. Unexpectedly, it rained heavily and the coconut tapper was careless because the coconut trees became more slippery when it rained. Then, while slicing coconut flowers, the coconut tapper slipped and fell from a height of 18 meters. This resulted in the coconut tapper experiencing a work accident on his back and breaking his right hand. At that time, the coconut tapper underwent traditional treatment with a fracture specialist who needed treatment for 2 months. On July 16 2019, there was a work accident in the agricultural sector involving a high-altitude coconut tapper, a coconut tapper who died as a result of falling from a height of 23 meters while tapping sap from a coconut tree. The cause is due to the coconut tapper's negligence when tapping the sap, but not using a safety harness. Cases of work accidents among coconut tappers in Central Java Province are increasingly occurring. On September 12 2020, there was a work accident when he fell from a coconut tree while tapping sap as a result of which the coconut tapper died because the tapper was not wearing a safety harness. The incident occurred in Y Village, Wonosobo Regency.

Based on cases of accidents working at height among coconut tappers in Wonosobo Regency, no data on work procedures at height was found because the work of coconut tappers is informal work and is a home industry job. Coconut tappers in carrying out their work from data from safety patrols that have been carried out show that discrepancies were found in the work environment, including that there were no stairs to climb, when climbing, tapping sap and descending trees, they did not use full body harnesses, there was absolutely no personal protective equipment used by coconut tappers. , do not use a safety helmet, safety vest. Based on the Regulation of the Minister of Manpower and Transmigration of the Republic of Indonesia Number PER.08/MEN/VII/2010 concerning personal protective equipment. In Article 3, the second point explains that personal protective equipment as intended in paragraph (1) must comply with the Indonesian National Standard

(SNI) or applicable standards. Article 6 point 1 explains that workers/laborers and other people who enter the workplace are required to wear or use personal protective equipment in accordance with the potential dangers and risks. In addition, Minister of Manpower Regulation Number 8 of 2010 concerning Personal Protective Equipment Article 8 Paragraph 1 states that personal protective equipment that is damaged, cracked or cannot function properly must be destroyed. Apart from that, the lack of availability of personal protective equipment is one of the reasons why coconut tappers do not use work safety equipment. This condition clearly contradicts the Minister of Manpower Regulation Number 8 of 2010 concerning Personal Protective Equipment Article 2 Paragraph 1 which states that employers are obliged to provide personal protective equipment for coconut tappers/workers in the workplace. In this case, because coconut tappers work independently, they need to be self-aware in maintaining work safety and health. Apart from that, according to preliminary studies that have been carried out, coconut tappers have never received guidance regarding occupational safety and health from the village, health center or government. This is the cause of the lack of knowledge, attitudes and practices in implementing safety and health work for coconut tappers at height. So this is a big potential and risk for coconut tappers, there could be accidents such as falling from a height. Based on the problems described above, this research aims to determine the implementation of safety and health standards for work at height as an effort to prevent work accidents among coconut tappers in Wonosobo Regency.

2. METHODOLOGY

In the methodology, the research used was a qualitative descriptive research method because to determine the implementation of occupational safety and health standards for coconut tappers at heights carried out in Wonosobo Regency based on several standard parameters and indicators based on Minister of Manpower Regulation No. 9 of 2016 concerning Occupational Safety and Health in Tapping Coconuts at Height. The time of the research was carried out from 8 January 2023 to 23 March 2023. The research location chosen was coconut tappers in Wonosobo Regency, where

this area was chosen because there were cases of work accidents among coconut tappers at high altitudes in October 2022. The number of informants for this research was obtained from 8 people with details of informant selection in accordance with the requirements for sampling. The informants used included: informants 1, 2 and 3, namely Village Heads Informant 4, Wonsobo Regency coconut tappers coordinator, in determining the sample, Coconut tappers Coordinator has an understanding of coconut tappers work related to heights, has experience as a coconut tapper; informants 5, 6 and 7 are coconut tappers in determining the sample, have an understanding of the work of coconut tappers at height, have experience as a project implementer for at least 1 year; Informant 8 Occupational Safety and Health Expert in determining the sample has an understanding of occupational safety and health in coconut tappers. The criteria for informant 8 are; 1) Know and understand Occupational Safety and Health planning for tapping coconuts at height including the process of climbing, tapping and descending coconut trees; 2) Know and understand the work procedures in the project related to occupational safety and health in tapping coconuts at height; 3) Know and understand safe working techniques in the field related to occupational safety and health in tapping coconuts at height; 4) Know and understand personal protective equipment, fall protection devices, and anchors in implementing occupational safety and health in tapping coconuts at height; 5) Know and understand the workforce in implementing occupational safety and health in tapping coconuts at height; 6) Physically and spiritually healthy; and 7) Want to be interviewed.

The data collection techniques used in this research used interviews, observation and literature study. The presentation of the data used in this research aims to determine the conformity of the points with existing standards. The scale for the level of conformity consists of appropriate, not appropriate and not yet implemented, then multiplied by 100% and distributed to the total points, namely 22 indicator points. So we get the percentage level of conformity for each indicator. Checking the validity of the data in this research uses triangulation techniques with sources and in the following way: 1) cross-check data through facts from various sources; 2) compare and

contrast data; and 3) using different groups of informants. Data analysis in this qualitative research was carried out during data collection and after data collection over a certain period of time. During the interview, data analysis was carried out on the answers given by the informant. If the answers from the informant after analysis are deemed unsatisfactory, the researcher will continue asking questions again until the objective of the interview is obtained, so that credible data is obtained. The steps for data analysis using the Miles and Huberman model are: 1) data reduction; 2) data presentation; and 3) conclusion.

3. RESULT AND DISCUSSION

Based on the explanation from the Minister of Manpower Regulation Number 9 of 2016, there are 5 parameters and 22 indicators for Occupational Safety and Health standards for coconut tappers who work at height, namely; planning (there are 4 indicators), work procedures (there are 5 indicators), safe work techniques (there are 5 indicators), personal protective equipment (personal protective equipment), fall protection equipment, and anchors (there are 3 indicators), and labor (there are 5 indicators). The following is a table of research results on the implementation of safety and health standards for working at heights for coconut tappers in Wonosobo Regency.

Table 1. Five Parameters and 22 Indicators For Occupational Safety and Health Standards For Coconut Tappers Who Work At Height

No	Parameter	Point Indicator	Conformity		
			Yes, it's appropriate	It's not appropriate	Not done
1	Planning	4	0	0	4
2	Work Procedures	5	0	0	5
3	Safe Working Techniques	5	0	0	5
4	Personal Protective Equipment, Fall	3	0	0	3

	Protection Devices, Anchors				
5	Labor	5	0	0	5
Total		22	0	0	22
Persentage		(100%)	(0%)	(0%)	(100%)

Basically, because coconut tappers is a home industry job, it will be different from industrial work in the informal sector which is under the auspices of the Company. Researchers here will present data according to their findings in the field. The planning parameters do not contain appropriate indicator points for coconut tappers in Wonosobo Regency. In planning parameters, it is important to apply risk assessment indicators and risk control indicators. If the two appropriate indicator points are implemented it will have a positive impact on all coconut tappers in Wonosobo Regency. Suitability of these planning parameter indicators will facilitate risk analysis of the dangers of each coconut tapper which refers to work at height. Based on the HIRADC literature study, the risk analysis of structural coconut tappers for tall coconut tappers was found to have a high risk. The risks of coconut tappers work can be controlled with a control hierarchy including ESRAA techniques, namely elimination, substitution, engineering, administration and personal protective equipment used. HIRADC as a reference for carrying out the necessary implementation related to reducing the risk of danger in accordance with coconut tappers work at height for the safety of coconut tappers in Wonosobo Regency.

Considerations must be taken in planning occupational safety and health for coconut tappers who have a high level of risk so that work accidents such as falls can be prevented. One method of risk control that can be given to coconut tappers is by using personal protective equipment that is safe and does not interfere with the work process when manipulating trees, tapping sap and descending coconut trees. Methods and implementation of occupational safety and health planning must be appropriate and safe to prevent work accidents (Gerhan & Gazalba, 2020). The hazard control hierarchy is a very important factor in the risk assessment process. Choosing a control hierarchy

offers benefits of effectiveness and efficiency so that risks are reduced and become acceptable risks when carrying out work. From an effectiveness perspective, the first control hierarchy will offer superior performance compared to the second hierarchy. The control hierarchy is the two justifications used to reduce risk: the occurrence of an accident or exposure and the severity of the accident or exposure that occurs (Neto, 2012).

Figure 2. Researchers interviewing coconut tappers

Work procedure indicators must be in accordance with the Minister of Manpower Regulation Number 9 of 2016. In the coconut tappers work, Wonosobo Regency, it is necessary to carry out step indicators to prevent accidents and eliminate the risk of accidents. If these indicators are not carried out, it will cause accidents for coconut tappers. This work is more directed towards working at heights which has a high risk. It was found that coconut tappers often complained of muscle pain when working and slippery trees during the rainy season and all coconut tappers who carried out their work had not used fall prevention safety equipment or safety harnesses to reduce the distance they fell and reduce the severity of the coconut tapper's fall. Therefore, coconut tappers must have knowledge, attitudes and occupational health and safety practices that must be carried out by coconut tappers to prevent potential work accidents from heights which can cause losses for coconut tappers and the sugar production process (Naresti et al., 2022).

A coconut tapper can experience work accidents, especially when climbing coconut trees at height, which are caused by many interrelated things and can have an impact on disability, work-related illnesses and death

(Tenriola et al., 2022). According to research entitled "Exploration of Occupational Safety and Health Risk Management in Coconut Penderes". In this research, 702 coconut pushers in Banyumas Regency were reported to have had accidents in the last five years. Work accidents in coconut crushers who are members of the Nira Satria Cooperative are influenced by 5 factors, namely knowledge, availability of personal protective equipment, behavior, self-efficacy, and the role of stakeholders. The informants' knowledge of risk management is good, but they have not been able to implement it at work. The available personal protective equipment is uneven and when used, it hampers time and work. The behavior of coconut pushers while working does not reflect good risk management and self-efficacy is still low. Stakeholders are still not coordinated with each other and there is no special program to protect coconut crushers from work accidents (Permatasari, 2021). So there is a need for an occupational safety and health program for coconut tappers which is expected to minimize work accidents until reaching the target of zero accidents (Imran et al., 2018).

Work procedure parameters that need to be carried out appropriately in coconut tappers work in Wonosobo Regency include technical indicators for fall protection methods, indicators for how to manage the equipment used, technical indicators and methods for monitoring the safety of coconut tappers work, workplace monitoring indicators, emergency preparedness and response indicators. The application of these indicators will affect the performance and safety of workers in carrying out coconut tappers at height. The importance of increasing the workforce is the importance of work safety, the equipment that is carried and will be used needs to be checked on the tools used for coconut tappers, supervision of the workforce needs to be carried out using an approach with several stakeholders such as village officials, health centers, health services and the government where the crane works, and the importance of understanding procedures when a disaster or work accident occurs.

In the agricultural aspect, the process of understanding safety characteristics and work accidents can be seen from the equipment used by coconut tappers when working. In particular, various types of accidents often

occur during tapping activities due to lack of concentration, fatigue and an inadequate number of fall prevention devices (Djoko Priyanto, 2010). The biggest causes of accidents falling from heights are negligence of safety rules, failure to wear personal protective equipment, use of inappropriate equipment, use of damaged equipment, and wrong position and posture when working (Yamani & Munang, 2019). A safety harness is a safety device that can be used when working at heights to support coconut tappers, materials and tools when each coconut tapper carries out their work activities, including climbing, tapping and descending coconut trees, this is stated in Permenakertrans No. PER 01/MEN/1980 concerning Work Safety. and Health when working in high places.

Before using a safety harness, coconut tappers need to be given knowledge and understanding in training activities on the use of safety harnesses by occupational health safety experts who have been certified by the Ministry of Manpower. Working as a coconut tapper is a job that carries a high risk of accidents falling from a height, so it is very important to use fall arrest equipment such as a safety harness. Therefore, installing, using, removing and maintaining safety harnesses needs to be supervised by the HSE team (Indah, 2018). In accordance with the Regulation of the Minister of Manpower of the Republic of Indonesia Number 9 of 2016 concerning Occupational Safety and Health in work at Height article 31 which explains the need for Workers who are: (1) Competent; and (2) Has authority in the field of Occupational Safety and Health at height." Then in accordance with article 32 paragraph 2 which reads "Competent workers as referred to in paragraph (1) are proven by a competency certificate. According to a book written by the Directorate of Occupational Health Development, "Emergency response plans in the form of methods are a reference for implementing emergency response." To prepare an emergency response plan, there are several steps that must be taken, starting with forming a team, determining the goals and scope of the plan, identifying potential hazards and work characteristics, and planning readiness before working to reduce potential effects. routine assessment and evaluation of emergency response protocols,

emergency response readiness simulation training, and evaluation (Dewi & Handayani, 2019).

According to the ILO (2017), this is related to the establishment of a culture of prevention that addresses all aspects of coconut tappers, including working conditions, work safety and health issues, as well as issues related to coconut tappers, namely labor inspection. It is important to provide knowledge, attitudes, skills and habits to each worker for safety in carrying out their work (Abdul Kudus Zaini et al., 2022). When workers are under supervision such as by village officials, community health centers or local government while working, it can increase safe and healthy behavior in the workplace. The reality in the field is that there is no supervision at all over coconut tappers because it is an independent job and each person is responsible for the work they do independently. Based on observations in the field, there is still a lot that needs to be implemented to build mutual concern for carrying out monitoring activities. This supervision can be done by providing a family approach, warning and providing appreciation so that coconut tappers work with unsafe actions and behave safely when working. Researchers also found that the work carried out by crane workers was manual work without the slightest attention to safety and health. There is no preparation before work such as doing stretching activities before work. The crane workers work at high risk without any supervision from any party.

Safe working technical parameters need to be applied in coconut tappers activities, namely indicators for working when climbing trees, indicators for working when tapping sap on coconut trees, indicators for moving vertically or horizontally above trees, and indicators for working with rope access, namely using a safety harness. Coconut tappers are not familiar with the use of safety harnesses. So that none of the coconut tappers have work protective equipment that is suitable for their work as coconut tappers. Coconut tappers only rely on their mentality and look for safe conditions according to themselves because the demands of coconut tappers are that they must complete every morning and evening to collect sap because if it is not collected regularly the sap water will be damaged and cannot be used again. Even though the potential danger that threatens coconut tappers is

very high and creates work hazards for coconut tappers at height, they do not take the initiative to use safety harnesses.

The human factor plays an important role in the occurrence of unsafe behavior (unsafe action) resulting in 80-85% of work accidents caused by negligence and human error. These results are in accordance with research conducted regarding the description of unsafe actions and unsafe conditions. Among workers, there were 79.51% unsafe actions and 55.55% unsafe conditions. The conclusion of this research is that the unsafe action frequently carried out by respondents is using incorrect personal protective equipment, amounting to 97.59%. The unsafe condition that most often endangers coconut tappers is the absence/lack of access to ropes (safety harnesses) and safe working ladders (Amalia et al., 2021). Based on the results of observations that have been made, researchers assume that if coconut tappers can understand, comply with and understand the applicable occupational safety and health standards, they will work according to procedures, because they are aware of the risks involved in failing to behave correctly or follow established work guidelines. (Cyma et al., 2018). Safe behavior while working can limit the occurrence of work accidents among coconut tappers. This is consistent with the 2021 research, workers never received work-related socialization that paid attention to occupational safety and health. Therefore, it is important to carry out outreach regarding preventing falls from heights by using a safety harness. Apart from socialization, you can also provide leaflets or brochures related to safety and health at work or at home (Amalia et al., 2021).

Figure 3. A coconut tapper using a safety harness

Indicators based on Minister of Manpower Regulation Number 9 of 2016 in coconut tappers work that can be applied regarding the use of work safety equipment and ladder marking can be adopted. The absence of this indicator will cause accidents among workers, especially regarding coconut tappers who are at risk of falling from tall trees. It was found that a coconut tapper had slipped and fell while climbing a coconut tree and caused minor injuries. Even though the accident caused minor injuries at the time, it has the potential to cause a higher risk of accidents for coconut tappers when climbing, tapping and descending trees. This can be done by taking care of the coconut tree trunk so that it does not become mossy and is no longer slippery when climbed. Most coconut tappers only rely on the strength of their hands and feet to support their bodies when carrying out coconut tappers activities by climbing, tapping and descending coconut trees. Therefore, in the future there is a high potential for causing work accidents. Risk assessment for coconut tappers, such as slipping and falling, is one of the dangers that falls into the medium risk category (Agric et al., 2013).

In carrying out their work, the activities of climbing trees, tapping sap and descending coconut trees can be carried out by coconut tappers who

have good climbing skills and are experienced in climbing other trees (Asmuji & Wakit, 2021). Although the use of a safety harness is the most desirable fall protection system for safety factors, special attention must also be paid to the most practical preventive measures. Special attention to coconut tappers can be done through; routine safety inspections, safety programs, reorganization of occupational safety and health training, accident prevention and promotion of occupational safety. Furthermore, to increase security, awareness and collaborative efforts from stakeholders are very necessary for the sustainability of the program (Ulfah et al., 2023). Based on the explanation from the Minister of Manpower Regulation Number 9 of 2016, the parameters of personal protective equipment, fall protection devices and anchors are very important because the majority of cranes do not have safety harnesses as personal protective equipment from falls. The coconut tappers in Wonosobo Regency do not provide personal protective equipment and fall protection devices. These missing indicator points have a negative impact on all coconut tappers in Wonosobo Regency. The impact is that coconut tappers who have not used personal protective equipment or fall protection devices are at great risk of accidents falling from trees which can result in disability and death. Coconut tappers at heights when carrying out their work are at great risk of slipping, being hit by dry branches of coconut trees, being scratched while tapping sap and falling at heights which will cause losses to coconut tappers and coconut sugar productivity.

The need to take necessary precautions to reduce the impact of safety and health hazard factors on coconut tappers to avoid costly accidents (Ulfah et al., 2020). In one study, a significant relationship was found between completeness in the use of work safety equipment and knowledge of the occurrence of work accidents (Suryani et al., 2022). So in this case it is very important to use personal protective equipment such as a safety harness to prevent accidents at height due to falls. Explanation from PER.08/MEN/VII/2010 article 2 that every employer is obliged to provide personal protective equipment for workers/laborers in the workplace. This can be applied to the home industry sector to implement the use of safety hernesses such as in coconut tappers. The personal protective equipment

described in paragraph (1) must comply with the Indonesian National Standard (SNI) or applicable standards (Minister of Manpower and Transmigration, 2010). Free personal protective equipment as intended in paragraph (1) must be provided by entrepreneurs free of charge. Adjusted to comply with fall protection devices for coconut tappers at heights based on Minister of Manpower Regulation Number 9 of 2016 concerning Occupational Safety and Health at heights. Article 23 can be said to have been implemented if you have and ensure that fall protection devices meet occupational safety and health requirements. Fall protection devices can be divided into (1) collective fall prevention devices and individual fall prevention devices, (2) collective fall protection devices and individual fall protection devices (Minister of Manpower and Transmigration, 2010).

Protection against the occurrence of risks or dangers in certain workplaces that coconut tappers may face is required by regulations in using personal protective equipment. The tool must be light in weight and more comfortable when used. Flexibility with attractive uses and shapes is necessary. The safety equipment used will not expose the wearer to additional risks due to improper use, wrong shape and resulting in danger. The equipment used must pass strength tests and comply with government regulations. In this case, the personal protective equipment used has passed Indonesian national standards. The protective equipment used does not interfere with the mobility of the coconut sugar tapper. For ease of maintenance, the spare parts used must be easy to find, so that if there is damage to one of the components of the tool, a replacement can be found. In the workplace atmosphere, the comfort of the workplace and the comfort of the facilities, such as the condition of the safety harness, will increase the work performance of each coconut tapper. Therefore, the condition of the personal protective equipment used by workers will affect the comfort of wearing it so that coconut tappers can use it more optimally (Baszczyński, 2023).

Indicators that need to be considered based on the Minister of Manpower Regulation Number 9 of 2016 include the anchor indicator. Missing indicator points have a negative impact on coconut tappers in Wonosobo

Regency. The absence of anchor indicators will cause accidents for workers such as coconut tappers who work at heights and have a high risk of falls. In carrying out coconut tappers, nothing is used to support the body when tapping coconuts at the height of the tree and only relies on body strength in the sense of manual handling. So the potential for falling from a very high height. Based on Ministerial Regulation Number 09 of 2016 article 28 paragraph 2, the mooring system must be able to withstand a minimum load of 15 KN. Installing anchors is the first action that needs to be taken before working using rope access. The anchor installation point must be adjusted to the type and character of the anchor that will be used later (Permenaker No. 9 of 2016, 2016). In this mooring system, permanent anchors can be used first, but if there are none, non-permanent anchors can be used. Installation of anchors usually requires workers who already have certification who have attended Worker at Height training at level 1 (Permenaker No. 9 of 2016, 2016).

The labor parameter has 5 indicator points that do not exist for coconut tappers in Wonsosobo Regency, namely the labor indicator at height level 1, the labor indicator at height level 2, the labor indicator at height level 1, the labor indicator at height level 2, the labor indicator at a height of level 3. These missing indicator points have a negative impact on coconut tappers in carrying out their work. In implementing coconut tappers, the majority of coconut tappers only use skills based on their experience without having knowledge of occupational safety and health based on the work processes they have gone through. So it will pose a danger to coconut tappers which will result in death due to the coconut tapper falling from a height. Not only that, these losses will hamper the pace of the coconut tapper's production process in producing sugar if work accidents such as falls occur. Automatically the coconut tapper will take a break temporarily or permanently due to permanent disability and death. Explanation from PP no. 50 of 2012 states that it is necessary to provide guidance to every worker, in this case coconut tappers, regarding occupational safety and health, this is because occupational safety and health will not work by itself, but occupational safety and health is formed from activities such as training and coaching. One effort to prevent and control

work accidents is by providing training and education (OSHA, 2015). The training program for high-altitude coconut tappers yielded results with effectiveness after being evaluated according to the risk assessment requirements for coconut tappers (Agustian et al., 2020).

KEP. 261/MEN/XI/2004 explains that companies that employ 100 (one hundred) workers/laborers or more are required to improve their employee competency through on-the-job training. The minimum percentage of workers/laborers who take part in job training as intended in paragraph (1) is 5% (five percent) of the total number of workers/laborers in the company (Kepmenaker, 2004). This can be applied by coconut tappers even though it is included in the home industry category. In relation to work at height, in this case the competency that must be carried out by companies according to Minister of Manpower Regulation Number 9 of 2016 in article 31 is that employers and/or administrators are obliged to provide competent and authorized workers in the field of occupational safety and health in work at height. It is further explained according to article 35 that the workforce as referred to in article 31 includes: 1. Level 1 high level workers (TKBT Level 1); 2. Level 2 high-altitude workers (TKBT Level 2); 3. Workers at level 1 height (TKPK Level 1); 4. Workers at level 2 heights (TKPK Level 2); and 5. Workers at a high level (TKPK Level 3). These are all important things that can be used as a reference for coconut tappers to pay attention to their work safety and health.

4. CONCLUSION

The conclusion from the research results, it was concluded that the total number of assessment indicators that had been researched was a total of 22 indicator points. Overall, there are no indicators that are carried out either in accordance or not in accordance with the standard parameters for safety and health working at height for coconut tappers in Wonosobo Regency. Based on the Minister of Manpower Regulation Number 9 of 2016, there are 5 parameters and 22 indicators for occupational safety and health standards at height work, consisting of planning (4 indicators), work procedures (5 indicators), safe working techniques (5 indicators), personal

protective equipment (PPE), fall protection equipment, and anchors (3 indicators), and labor (5 indicators). Of these five parameters, nothing is done by coconut tappers. The following are several internal and external factors that influence the implementation of occupational safety and health standards. Firstly, the internal factors that hinder the implementation of the standards of Minister of Manpower Regulation Number 9 of 2016 in coconut tappers at height are: lack of workers who understand and care about occupational safety and health, the absence of supporting facilities for occupational safety and health for coconut tappers at height and there is no occupational safety and health budget that can be used. The two external factors that hinder the implementation of the standards of the Minister of Manpower Regulation Number 9 of 2016 for coconut tappers at height are: the absence of supervision from the Manpower Service in their implementation while they work. The weakness of this research is that there is limited time with coconut tappers because they are busy working other than as tappers. The suggestion from this research is that future researchers are expected to be able to use other variables in determining occupational safety and health indicators for coconut tappers who work at heights.

STATEMENT

The statement section the author would like to express his deepest gratitude to the Bosowa University International Conference Team who helped become Peer-Reviewers in publishing this article. especially to Mrs. Dr. Muliati as chairman of this activity.

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LANGUAGE POLITENESS IN COMMUNICATION OF DOCTOR EDUCATION PROGRAMME STUDENTS BATCH 2021/2022 BOSOWA UNIVERSITY

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ABSTRACT

This study was conducted to describe the language politeness that occurs during the communication process and the teaching and learning process in the 2021/2022 batch of Medical Education study programme at Bosowa University. This type of research is descriptive research with a qualitative approach, applied to describe the language politeness of the 2021/2022 batch of Medical Education students at Bosowa University. The data collection techniques used in this research are observation and interview techniques. The observation method is applied in the form of SLD (Student Led Discussion) technique, while the interview method uses recording technique. The results of this study indicate the use of language politeness in the teaching and learning process and communication at the Faculty of Medical Education class of 2021/2022 Bosowa University, the politeness is caused by: familiarity factor, respect factor, age factor, and dominating factor.

KEYWORDS

Language politeness, communication, medical education students

1. Introduction

a. The Nature of Language and Linguistics

Language is a system of symbols of meaning in society Language use is individual and social. Language is a system that is interconnected in an interdependent relationship, and cannot be separated from one another. The use of language is productive. Therefore, language is always used in its comprehensive form. relevant, meaningful, and functional. Language is presented in the context of learners' use. The use of language is driven from

within learners themselves and the need for learners to communicate and be structured and expressed in accordance with the norms of community life. Through language and learning about language that takes place simultaneously in the context of authentic oral and written language use. Language development takes place through a process of reinforcement. Learning language is learning how to construct meaning according to context.

b. Language Function

The function of language according to Halliday in (Eliya, 2022, 12) outlines, the function of language is; 1) Instrumental function refers to the use of language based on the occurrence of an event. Instrumental function is that language aims to manipulate the environment in which the language is used and triggers an event to occur. Example: 'Do not open the door' in this example the instrumental function of language causes the door not to open. 2) Regulatory functions include the use of language aimed at controlling or regulating the situation. Similar to the instrumental function, but the regulatory function tends to be aimed at others because it relates to the application of norms, regulations, rules, or values. Example: A mother tells her child 'If you are naughty, you don't get pocket money' in this example the regulatory function of language controls the child's behaviour so as not to be naughty. 3) Representational function is the function of language to convey facts and knowledge, as well as convey or explain an event that can be proven true. Example: 'The sun rises in the east' in this example the representational function of language states a fact that can be proven true. 4) Interactional function is the use of language that aims to support the existence of humans as social beings, namely as a tool to make social contacts with other people. Example: 'How are you today?' in this example the interactional function of language is in charge of opening a conversation in order to create communication, 5) Personal functions include the application of language as a medium to describe the emotional state or feelings of the speaker. Example: 'Wow, what a beautiful view in this building' in this example the personal function of language shows the speaker's feelings of admiration about the scenery he sees. 6)Heuristic function is the function of language intended to gain knowledge and learn about the surrounding environment. Example: 'Why

does mum work?' is an example of using the heuristic function of language to gain knowledge about the reasons or causes of mum's work. 7) Imaginative Function What is meant by imaginative function is the use of language to create fictitious things or events (not real), such as fairy tales. Example: 'Last night I dreamed of meeting a dragon' is an example of the use of the imaginative function of language where the speaker reveals fictional events.

Language use among students is inseparable from the learning theory put forward by Gagne in Warsito (2018) learning theories include behaviouristic theory, cognitive theory, humanistic theory, nativistic theory, cybernetic theory. 1) Behaviouristic theory, is a basic theory that must be known, because in its application there will be a change in behaviour. When an individual is considered to have completed learning, there will be a difference in the behaviour shown. Making anything given by each teacher can be a stimulus for students. The process of applying various kinds of learning theories and examples is very concerned with behaviour, besides that there is also reinforcement which is considered important. A reinforcement is a form of response given. The addition of a response can also strengthen reinforcement and vice versa. Various kinds of learning theories and examples can produce more active students when learning takes place. An educator can provide reinforcement for the good behaviour given. The existence of a symbol done by using thumbs up to students is a form of appreciation, so that it can provoke enthusiasm for learning. 2) Cognitive theory, which prioritises the process rather than the outcome of learning. This theory explains that learning does not only involve a relationship or stimulus and response, but behaviour. This is put together by a perception that is analysed with the understanding of experts in accordance with the purpose of learning. A cognitive has a clear purpose to emphasise some parts that are considered most related. It is a process that consists of information processing, memory, emotional and others. The cognitive process refers to an activity that makes students think more complexly. Giving tasks to learners, makes them think to complete the task. 3) Humanistic theory, is a process that is done to fellow humans to respect each other. If an individual can measure and predict their potential, it will be very good for life. An important

role in the theory focuses on the freedom that each individual wants to have. This affects the results and also the enthusiasm of students in the learning process. Mastery of knowledge as well as affective derived from attitudes can be developed, here is an example of the application of the theory, namely: Teachers have the opportunity to reward students who successfully complete assignments or questions. Students are able to avoid a pressure in the environment that creates a sense of learning. The view of this theory, provides an opportunity for students to be able to develop their abilities in order to gain learning experience. making students more deeply explore the meaning of learning itself as a very useful thing for humans. 4) Cybernetic Theory aims to provide learners with important information.

The learning process with active linguistic interaction can be influenced by various situations that are appropriate for students. This is because the way of learning is determined by different systems. Examples of the application of this theory in learning include: a) Perform actions that attract students' interest. b) Provide information to students related to teaching objectives. c) Stimulate students' interest in learning. d) Convey related discussion content according to the theme of learning material. e) Guide students to be active in class hours. f) Affirm good behaviour and attitudes to be emulated by students. g) Show feedback on behaviour change. 4) Constructivistic theory, a learning method that emphasises process over outcome. It allows grades to be analysed, making the target of student understanding much more important. An effort is made to provide experiences so that students can discover themselves. Not only that, the form of self-potential, ability, and knowledge possessed. The presence of the learning process can provide opportunities for students to get fun learning experiences and open thinking. The formation of a knowledge owned by students. So, learning this language emphasises the psychological process, as stated in the psycholinguistic theory of language learning.

2. Method

The research method taken is descriptive research with a qualitative approach. used to build knowledge that aims to produce meaning, such as

investigating and studying social phenomena strongly, unpacking the meaning that people ascribe to activities, situations, events, or artefacts, or to build a deep understanding of several dimensions of social life. According to the background of the problem relating to the activity of using language politeness in linguistic interaction of 2021/2022 class of Medical Education students.

Data collection techniques are carried out by 1) Observation technique of observing, interpreting and reflecting on activities, linguistic interactions and behaviour of Medical Education students class 2021/2022, numbering 109, 18 male students and 91 female students. 2) The technique of Simak Libat Bebas Cakap (SLBC) is carried out during the process of interaction between students and students, students and lecturers in progress. hear the conversation carried out by the object under study. 3) Interview technique, This interview technique is carried out directly or with the help of interview guidelines, through a list of questions needed for data collection at the time of research.

Technique of collecting data

There is a working procedure in analysing the data with the following steps.

(1) Identifying the type of data collected.
(2) Classifying the data that has been identified and analysed based on the maxims of language politeness.
(3) Drawing conclusions on the results of analysing the data that has been researched

3. Discussion

Language is a mirror of one's personality, even language is a mirror of the nation's personality. Through the language used, a person or a nation's personality can be known. The use of polite language has not received much attention. Therefore, it is very natural if we find the use of language that is not good and correct. This happens because language users do not know that within a language structure (which is seen through variety and grammar) there is a structure of politeness.

The rules that have been socialised to students are good and correct language rules. In fact, the rules of communicating the use of good and correct language rules are not enough. Correct language is language that is used in accordance with applicable rules. However, there are still more rules that need to be considered, namely the rules of politeness. When someone is communicating, in addition to good and correct rules, the rules of language politeness are also included. When someone conveys the intention to ask for help from others, the intention should be conveyed using polite forms (imperative subtle). If the request for help is addressed to a respected person, subtle imperative words should be used. For example, 'please do me a favour', 'would you mind?'

The use of language feels more polite, if speakers can speak using certain forms that can be perceived as polite language in language learning, such as:

(1) Bring the assignment here right now, I want to correct it! (less polite)
(2) Please bring the assignment here for correction! (somewhat polite)
(3) Can the assignment be brought here for correction? (more polite)

Speaking well, correctly and politely can become a habit and can shape one's behaviour for the better. The opinion that language shapes human behaviour is also supported by facts that occur in society. Someone who is communicating by using language that can smooth the intent to be conveyed, becomes a person's character and personality to be polite and smooth. However, if someone who communicates with a loud and rude language style, the nature and personality of that person also becomes loud and rude.

1. Polite Language in the Teaching and Learning Process

Whether someone is polite or not can be seen from the language used in communication. A person's language and behaviour become the benchmark of language politeness. The language used can be verbal and nonverbal. Verbal language will reveal the right-wrong, good and bad of a person when he is communicating verbally. On the other hand, nonverbal

language is language that is expressed in the form of kinesic actions, kinesthetics, gestures, tone, mimicry, and so on when someone is self-actualising.
Example:
(a) Can anyone explain the problem in number 2?
(b) What happened to you, Helena, that you didn't make it to the lecture yesterday?
(c) Please look carefully at the question, and then work on the answer!

2. Difficulties in Expressing Intentions Politeness in communication is related to speech acts as stated by Austin (in Pranowo, 2009: 34), who argues that speech acts always contain three elements, namely: (1) the locution of the utterance produced by a speaker, (2) illocution, which is the intention contained in the speech or utterance, and (3) perlocution, which is the effect caused by the utterance.
Example:
(Locution)
Ifah: 'I'm tired, let's practice again.'
Lena: 'Yes, I'm tired.'
(Illocution)
Putri : 'Milla, come with me to the photocopy place first, I want to make an assignment.'
'I'll also photocopy the practical report.'
Mila ; 'Wait a minute, just a little bit more, I'll finish the assignment given by the doctor.
doctor'
(Perlokusi)

Son: 'Friends, Tomorrow, you are expected to attend the campus, there are many things to organise.
to organise, senior brother wants to come tomorrow to help ki'
Mila: 'Senior brother is coming?' (happy expression)

According to Austin, speech can be categorised as (a) what is said is the same as what is intended, (b) what is said is different from what is intended, (c) what is said is less than what is thought. To complete the category of speech, Leech (in Pranowo) proposes seven principles of politeness known as maxims, namely (1)*tact maxim*, which is to give advantage to speech partners, (2) *generosity* maxim, which is to maximise loss to oneself, (3) *praise* maxim, namely maximising praise to speech partners, (4) humility maxim, namely minimising praise to oneself, (5) approval maxim, namely maximising agreement with speech partners, (6)*sympathy* maxim, namely maximising expressions of*sympathy* for speech partners, These seven maxims are more dominantly implemented in students who are active in student institutions or students who are active in interfaculty and extrafaculty organisations, so that in every linguistic interaction, they respond faster and initiate linguistic interactions more often than other friends, who tend to prefer passive interactions, except in group discussions, during the lecture process.

Example:

1.Maxim of tact:

Lena: 'If you can't work on this group assignment, let me do it.
help mamika later you will toss the print ki'

Angel: 'Yes'

2. Maxim of generosity

Putra: 'Who else wants mineral water?'

Lena: 'Me, how much?'

Putra ; 'No, you don't have much.'

3 Maxim of Compliment

Agung : 'Mantaap indeed the percentage of group 2.'

Chorus: 'Mantaap tawwa'

4. Maxim of agreement

Lena: 'Class B friends, there is information from Mrs Lecturer, today we don't have time to come in.
can be replaced tomorrow at 13.00, okay?'

Chorus : 'Yes

5. Maxim of Consideration
Lena: ‘Tabe Mum, the Indonesian language course can't be changed tomorrow because we have a practical course from dr.
have a practical course from Dr Teddy. How about Friday, 09.00, Mum?’.
Lecturer: ‘09.00? Okay. Yes.’
6. Maxim of humility
Anggi: ‘Expensive shoes, Lena’
Lena: ‘No kak, it's long.’
7. Maxim of Sympathy
Lena: ‘Permission Mum. Holy sick. It's been a while.’
Chorus: ‘What's wrong with you. It's the last hour of class, go straight there.’

Principles of Language Politeness in the Language Learning Process. An utterance is said to be polite if it can minimise the expression of opinions that are not polite. The principle of politeness and the use of language can be measured by looking at seven things, namely:
a) The ability to control emotions so as not to lose control in speaking. When in the teaching and learning process, the mood remains calm, coherent in thinking, and clear pronunciation. Such behaviour creates a positive image of the speaker.
b) The ability to show a friendly attitude towards students so that students can receive the material well. Emotional state determines the politeness of speech acts.
c) Use language that is easily understood by learners, namely (1) complete speech, (2) logical speech, (3) clear and verbal, (4) using language varieties that are appropriate to the context.
d) Ability to choose words that are pleasing to learners and adapted to the situation.
e) State the learning objectives clearly and straightforwardly, especially if the material discussed needs maximum attention by the learners.
f) Pay attention to other speech norms, such as body movements, speech order, show polite and attentive gestures to learners, if there is a response

from learners, for example asking questions or answering questions posed to them.

4. Conclusion

Thus, communication applied in linguistic interaction and in the teaching-learning process is a communication that can determine the character of a teacher and also show the character of students. Kuntarto (2011) asserts that politeness in Indonesian language learning consists of (1) spelling politeness, (2) term politeness, (3) sentence politeness, (4) paragraph politeness, (5) verbal communication politeness.

Language politeness in the linguistic interaction of Medical Education students batch 20201/2022 still applies the seven principles of politeness, namely, maxims (1)*tact maxim*, (2)*generosity* maxim, (3)*praise* maxim, (4) humility maxim, (5) approval maxim, (6)*sympathy* maxim, and (7) *consideration* maxim In the teaching and learning process, sometimes participants fail to understand the information conveyed can be influenced by the lack of clarity of information conveyed by a teacher, which is in the form of verbal clarity during the teaching and learning process.

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FORMULATION LIQUID SOAP FROM ECO ENZYME AS A WAY OF UTILIZING FRUIT PEEL WASTE

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ABSTRACT

Eco enzyme is a multifunctional liquid produced through a fermentation process from a mixture of brown sugar, vegetables and fruit peels, and water. Eco enzymes have various benefits for the environment and human health. The various organic acid compounds and enzymes contained in eco enzyme function as cleansers, stain removers, rejuvenators and skin smoother. In addition, using eco enzyme as a cleaning agent can help reduce the use of chemicals that are dangerous and damage the environment. The purpose of this research was to formulate liquid soap with the addition of eco enzyme. In this study, a natural liquid soap is made from the saponification process between KOH base with coconut oil, palm oil, olive oil, grape seed oil, sunflower oil, soybean oil and shea butter to get a soap with good cleaning power while being able to soften and moisturize the skin; the amount of eco enzyme added is 2.5% and 5%. The addition of eco enzyme in the formula shows good compatibility, but causes a decrease in pH and foam height of the soap. The results of statistical tests showed a significant effect of eco enzyme addition on the soap pH ($p = 0.038$), as well as the soap foam height ($p = 0.027$). However, the pH, the height of the foam, as well as the organoleptic characteristics are in accordance with good soap quality standards.

KEYWORDS
Eco-Enzyme, Soap, fruit peel waste

ABSTRAK

Eco enzyme merupakan cairan multifungsi yang dihasilkan melalui proses fermentasi dari campuran gula merah, sampah organik dari sayur dan kulit buah, serta air. *Eco enzyme* memiliki berbagai manfaat bagi lingkungan dan kesehatan manusia. Berbagai senyawa asam organik dan enzim yang terkandung dalam *eco enzyme* berfungsi sebagai pembersih, penghilang noda, peremajaan dan penghalus kulit. Selain itu, penggunaan *eco enzyme* sebagai bahan pembersih dapat membantu mengurangi penggunaan bahan-bahan kimia yang berbahaya dan merusak lingkungan. Tujuan dari penelitian ini adalah memformulasi sabun cair dengan penambahan *eco enzyme*. Pada penelitian ini dibuat sabun cair alami dari proses saponifikasi antara basa KOH dengan minyak kelapa, minyak sawit, minyak zaitun, minyak biji anggur, minyak bunga matahari, minyak kedelai dan shea butter sehingga diperoleh sabun dengan daya pembersih yang baik sekaligus mampu untuk melembutkan dan melembabkan kulit; jumlah *eco enzyme* yang ditambahkan adalah 2,5% dan 5%. Penambahan *eco enzyme* pada formula menunjukkan ketercampuran yang baik, namun menyebabkan penurunan pH dan tinggi busa sabun. Hasil uji statistik menunjukkan penambahan *eco enzyme* berpengaruh nyata terhadap pH sabun (p=0,038), serta tinggi busa sabun (p=0,027). Namun pH, tinggi busa, serta sifat organoleptik sabun telah memenuhi baku mutu sabun yang baik.

KATA KUNCI
Eco-Enzyme, Sabun, limbah kulit buah

1. INTRODUCTION

Organic waste is a type of waste that is always produced by human activities. Organic waste consists of materials that can be

decomposed naturally by microorganisms, such as food scraps, leaves and paper; organic waste generated from the kitchen, such as food waste, egg shells and other organic waste, is the main source of organic waste (Ashokkumar et al., 2022). Unfortunately, many people just throw organic waste into the trash without thinking about its impact on the environment. If organic waste is not managed properly, it can cause serious environmental problems, such as the spread of disease and water and soil pollution. It is also important to carry out education and campaigns to increase public awareness about good organic waste management. Communities must be taught to sort and separate organic waste from non-organic waste, as well as the correct way to process organic waste, such as providing a waste bank (Sitepu et al, 2019).

Eco enzyme or garbage enzyme is one way to process selected fruit peel waste into something useful. Eco enzyme was first introduced by Dr. Rosukon Poompanvong in the early 1980s. Eco enzyme comes from anaerobic fermentation (without O2) of fruit and vegetable peels, besides containing various catalytic enzymes lipase,

trypsin, amylase, and can kill/inhibit the growth of pathogenic bacteria; Eco enzyme also contains various alcohols and organic acids, especially acetic acid. This fermented liquid can later be used for various purposes, one of which is skin care. Usually, the eco enzyme solution is used as a mixture for facial care, soaking the feet, and treating skin complaints such as acne and itching (Arun & Sivashanmugam, 2017; Novianti et al., 2021). Eco enzyme is an environmentally friendly product that is easy to make with affordable and easily available ingredients (Pranata et al., 2021). The way to make eco enzyme is quite easy, just mix brown sugar, vegetable or friut waste, and water in a ratio of 1 : 3 : 10. The eco enzyme liquid produced after minimum three months of fermentation process has a dark brown color and a strong sweet and sour fermentation aroma. During the fermentation process, the bacteria in organic waste will break down the waste into a liquid which has various benefits (Yanti and Awalina, 2021). Eco enzyme contains a number of bacteria that are useful for breaking down organic waste, such as lactic acid

bacteria, bacillus and lactobacillus (Mavani et al, 2020). Eco enzyme has the advantage of being a simple manufacturing method, using raw materials derived from organic waste that is abundant in the environment, so it is very practical to apply.

In the past, soap was always made from various vegetable oils and alkaline bases, but as time goes by and technology develops, the raw materials for making soap have changed, soap is now made from a mixture of synthetic chemicals and natural ingredients. The addition of Sodium Lauryl Sulfate (SLS), Sodium Lauryl Ether Sulfate (SLES), and Linear Alkyl Benzene (LAB) detergents is generally done to increase the amount of foam and cleaning power of soap. However, this material causes several problems for the environment and health; this detergent is difficult to decompose in the environment and can cause skin irritation in consumers who have sensitive skin (Harfadli et al., 2021). On the other hand, soap for medical and clinical purposes is usually made by adding active antibacterial compounds, but there are several problems in using synthetic antiseptics. The FDA has issued a regulation that 19 active substances contained in antiseptic hand soap and bath soap are generally not classified as safe and effective, 2 active substances, namely triclosan (TCS) and triclocarban (TCC), which are of greatest concern and have been found to have potential danger, include increased risk of antibiotic resistance, impaired fertility, and increased risk of allergic diseases. Although the mechanisms underlying the detrimental effects of TCS and TCC have not yet been fully proven scientifically, doctors are taking preventive steps by educating the public to avoid soap that contains these two active substances (Hartono, 2017). The large danger posed by synthetic antiseptic active substances for health and the environment encourages the search for natural products, including those derived from herbs and processed organic waste products. One natural product that can be formulated into antiseptic soap is eco enzyme.

Eco enzyme containing various catalytic enzymes lipase, trypsin, amylase, and can kill/ inhibit the growth of pathogenic bacteria; and

also contains various alcohols and organic acids, especially acetic acid, which has antimicrobial activity and at certain concentrations can be used as an antiseptic (Novianti et al., 2021; Rahayu et al., 2021, Syaiful et al., 2023a). Eco enzyme has high cleaning power due to its organic acid content, so it can be used as a cleaning solution for dishes, floors, clothes, toilets, as well as hair wash and bath soap. Eco enzyme has the advantage of being a simple manufacturing method, using raw materials derived from organic waste that is abundant in the environment, and using containers made from used plastic so it is very practical to apply (Ginting et al., 2021; Gu et al., 2021; Mavani et al., 2020; Syaiful et al., 2023b).

Liquid soap is a liquid skin cleanser made from synthetic detergent active ingredients and/or from a saponification or neutralization process of fat, oil, wax, resin or acid with an organic or inorganic base without causing irritation to the skin (Meizalin and Paramita, 2021). Soap has become a primary need in society, apart from cleaning the body, soap can also treat skin diseases caused by bacteria and fungi. To get soap with other benefits besides cleaning, certain ingredients need to be added, including antibacterial, whitening, etc., but unfortunately some of these ingredients are chemicals which are actually dangerous in long-term use (Dwiyanti, et al., 2021). This research was carried out to create a soap formula made from eco enzyme as the additive ingredient which is made in the form of liquid soap. The various organic acid compounds and enzymes contained in eco enzyme will be combined with other natural ingredients so that they function as a cleanser, stain remover, and smooth skin.

2. METHODOLOGY

The research consisted of three stages, i.e. eco enzyme preparation, formulation liquid soap from eco enzyme and physical testing of soap.

a. Eco enzyme preparation

1) Weigh and measure water, fruit peel, and brown sugar with 10:3:1 respectively (e.g. 10 gram of brown sugar, 30 gram of fruit peel, 100 gram of water).
2) Put brown sugar and water in an airtight plastic container, stir and leave until the brown sugar melts.
3) Prepare selected fruit peels (at least 5 kinds of fruit peels, preferably those rich in enzymes e.g. papaya, pineapple, orange peel), then wash it clean and chop cut into small pieces, to make a fresh aromatic enzyme, add more orange/lemon peel.
4) Mix all ingredients in a container and stir, close the container tightly and make sure it is airtight, then tape it to prevent contamination.
5) Mix all the ingredients in a container, then stir and close the container tightly. Make sure it is airtight, then seal it to prevent contamination.
6) Store the container in a cool, dry and well-ventilated place and protected from direct sunlight.
7) Let stand for at least 3 months. Intensive observation is carried out at the beginning of the fermentation period to prevent container leaks or other things that might occur.
8) After 3 months fermentation process, strain the liquid waste into a bottle or other container.
9) Eco enzymes are ready to use. Dilute with water before use.
10) Generally, if the method of making *eco enzyme* is successful, the color of the liquid will turn brown with a distinctive aroma of sour fermentation and good eco enzyme has a pH of less than 4.0.

b. Formulation eco enzyme liquid soap
   1) Wear personal protection, such as rubber gloves, masks, and industrial glasses, to protect the skin from exposure to harmful materials.
   2) Measure the ingredients for making soap using SoapCalc.com. The oil phase consists of 225 g of olive pomace oil, 100 g of coconut oil, 50 g of palm oil, 30 g of sunflower oil, 15 g of grape seed oil, 10 g of soybean oil and

25 g of shea butter. Three soap formulas were made by varying the amount of distilled water and eco enzyme; F0 with 180 g of distilled water, F1 with 162 g of distilled water + 18 g of eco enzyme (2.5% weight from total formula), and F2 with 144 g of distilled water + 36 g of eco enzyme (5% weight from total formula).

3) Prepare the Lye-Water Solution. Put water in a heat-resistant container, add 106 g KOH to the water (not vice versa) little by little while stirring until the KOH is completely dissolved; in this process, a KOH solution will be produced heat and steam, and the steam will irritate the eyes and skin. Let the lye solution stand until slightly clear and cool before use.
4) Pour the oil into the crock pot.
5) Add the KOH solution into the oil and stir it using a hand blender for a few minutes until trace or the consistency of the solution becomes gel-like or juice-like.
6) When the solution's consistency still liquid, pour the eco-enzyme slowly while stirring until it is evenly mixed with the solution. The soap base is heated in warm condition until the soap becomes clear or transparent while stirred every 30 minutes. Color changes will occur during the heating process, initially the soap is milky white, but over time it will change to clear and transparent, this indicates that the alkali has reacted completely with the oil.
7) When the soap paste color becomes clear, a small amount of soap paste diluted into a small amount of distilled water then observing whether the soap solution is clear or not (clarity test). The pH of the soap is also checked at this time with universal pH paper or a phenophthalein indicator. If the soap is neutral and clear, turn off the crock pot and let the paste sit for 12 - 24 hours and to finish the process.
8) The next step is to dissolve the soap with distilled water in a ratio of 1:1 to 1:2 according to the desired soap consistency.

c. Physical property test
   1) Organoleptic test is carried out by directly observing the color, shape and smell of the liquid soap.

2) The pH value was measured using a pH meter. One gram of liquid soap sample was diluted with 10 ml of distilled water, then the pH probe (electrode) is inserted into the solution and the number printed on the pH meter is recorded. The test was carried out 3 times in replication (Manjusha et al., 2019).
3) Foam height test was carried out by weighing 1 g of sample of soap, then added to a 50 ml measuring cylinder containing 10 ml of distilled water. The mixture was shaken vigorously so as to generate foams. After shaken for about 2mins, the cylinder was allowed to stand for about 10mins. The height of the foam in the solution was measured and recorded (Isah, 2006; Manjusha et al., 2019).

d. Statistical analysis

Kruskal Wallis test was carried out using SPSS software; p value is a parameter used to determine whether there is a difference between means that is statistically significant; compare the p value with a significance level of 0.05 to assess the null hypothesis.

3. RESULTS AND DISCUSSION

Eco enzyme is used as an additional ingredient in the liquid soap because of its function as a natural enzyme, antiviral, antibacterial, antifungal and antioxidant, so eco enzyme is expected to improve the function of soap which can remove body fat and dirt and can also kill germs as added value and increase product competitiveness. To minimize the impact of using soap made from sodium lauryl sulfate detergent which is harmful to health and the environment, soap made using KOH alkaline soap based with various natural oils.

The soap formula is intended for normal skin that tends to be dry, so the main oil used in the formula is olive oil, this causes the soap's oleic acid content to reach 44%. Oleic acid functions to increase the moisture of bath soap, but the drawback is that it does not produce abundant foam. Several oils with high linoleic fatty acid content are added to the soap formula, especially grape seed oil,

soybean oil and sunflower oil, so that the total linoleic acid in this soap formula is 15%. Linoleic acid is an unsaturated fatty acid functions as a moisturizer and produces bath soap that feels soft on the skin. The content of unsaturated fatty acids (both of oleic and linoleic acid) is what causes the conditioning and creamy properties of the soap to be high, as can be seen from the results of calculating the soap content with SoapCalc (shown by the data in table 1 below, the conditioning and creamy values are 63 and 23 respectively). This value refers to the soap's high emollient content that remains on the skin, helping the skin retain moisture and keeping it soft. A higher creamy number indicate the stability and softness of the foam, and tends to produce a creamy foam with fewer bubbles or foam.

Table 1. Soap Recipe Properties by SoapCalc.com

Soap quality	**%**	**Recommendation**
Hardness	34	29 - 54
Cleansing	14	12 - 22
Conditioning	63	44 - 69
Bubbly	17	14 - 46
Creamy	23	16 - 48
Iodine	68	41 - 70

To balance the conditioning and creamy properties with the foaming ability, several oils with high contents of lauric, myristic, palmitic and ricinoleic acids are added to the formula. Coconut oil and palm oil are two types of oil that are known to have cleansing and lathering powers. Coconut oil contains lauric acid and myristic acid which are fatty acids that contribute to its cleansing ability and produce rich lather. Palm oil contains myristic acid and palmitic acid which affect hardness and produce soft foam in bath soap. The addition of coconut and palm oil causes the contents of lauric acid, myristic acid, palmitic acid and stearic acid in the formula to be 10%, 4%, 15% and
5% respectively. Another ingredient added is castor oil which has advantages that other oils don't have, it produces stable foam and

affects the moisture level of bath soap, the main ingredient is ricinoleic acid. Meanwhile, shea butter contains stearic acid which can also produce soap that lasts longer when used. So, the number of bubly produced by the soap is 17 (shown by the data in table 1 above); the general value range is 14 to 46, higher bubble numbers will tend to produce a frothy, fine lather.

Organoleptic tests are intended to observe the physical appearance of eco enzyme soap which includes consistency, color and odor. The results of organoleptic observations of eco enzyme liquid soap displayed in Table 2.

Table 2. Organoleptic Observation Results of Eco Enzyme Liquid Soap

Soap Formulation	Organoleptic Parameters		
	Consistency	Color	Odor
F0	Viscous Liquid	cream	Olive Oil
F1	Viscous Liquid	rownish yellow	mentation aroma
F2	Viscous Liquid	k brownish yellow	mentation aroma

The three soap formulas tested had not added fragrances and dyes so that the aroma and color produced were still dominated by the aroma and color of the active ingredients used. All soap formulas are in viscous liquid form so they are easy to remove from the container and thick enough to allow the soap to remain on the skin for a while before being rinsed off.

Even though no coloring is added, the addition of eco enzyme to F1 and F2 soap produces a more attractive brownish yellow color compared to F0 soap which is not given eco enzyme. This shows that eco enzyme liquid soap does not require the addition of dyes.

In contrast to the attractive color of the soap, the aroma of F1 and F2 soap is still less fragrant, the addition of eco enzymes can cover the strong aroma of oils such as F0 but gives rise to the characteristic aroma of eco enzyme in soap. This shows that eco enzyme liquid soap still requires the addition of fragrance, especially fresh fruit fragrance.

The measurement results of pH and foaming ability of eco enzyme liquid soap displayed in Table 3 below.

Table 3. Results of pH and foam height measurements

Liquid Soap	pH*	Foam Height (mm
F0	10,07 ± 0.058[a]	63,33 ± 1,528 [a]
F1	9,77 ± 0,115[ab]	55.00 ± 2,000 [ab]
F2	9,67 ± 0,058[b]	43.33 ± 1,528 [b]

Note: * = differ significantly (P<0.05)
Values with different letters (a, b) within the same column differ significantly (P<0.05)

The pH test is one of the quality requirements for liquid soap. This needs to be done because liquid soap will come into direct contact with the skin and can cause problems if the pH does not match the skin's pH. The acid mantle is the top layer and protective surface of the skin made from oil and sweat to maintain skin moisture. Therefore, the pH of the skin must be maintained so that it can work well and look healthy (Imamsyah and Paramita, 2022). If the pH of the soap is too alkaline, it will cause dry and sensitive skin, whereas if it is acidic, it will cause the skin to become inflamed.

The results of soap pH measurements were F0, which is a soap base that is not added with eco enzyme, has a pH above 10. The pH value of this soap is influenced by the KOH, an alkaline material that makes up the soap, which is a strong base. A way to lower the

pH of soap can be done by adding acidic ingredients, one of which is eco enzyme. Eco enzyme is a solution rich in organic acids that is formed naturally in the fermentation process of fruit peels, brown sugar and water, and has a pH below 4.0. The data in Table 3 showed that the addition of eco enzyme will reduce the pH of the soap preparation from 10.07 ± 0.058 (for F0 soap without eco enzyme) to pH 9.77 ± 0.115 for F1 soap and pH 9.67 ± 0.058 for F2 soap. The low pH value of eco enzyme will lower the pH of the soap, that making it safer and more comfortable when used.

The results of statistical tests on pH of the eco enzyme soap formula showed that the measurement variable does not meet the normality assumption of a one-way anova, so it was continued with the Kruskal Wallis test which showed a significant value of 0.038 ($p < 0.05$); which means that there was a significant difference in pH between soaps treated with eco enzyme with soap without eco enzyme. Further tests showed that the pH of the formula that had a significant difference was the pH of F0 and F2, while the pH of F0 and F1 as well as the pH of F1 and F2 showed no significant differences. However, the pH of the three soap formulas fulfilled the soap pH requirement range, i.e. 9 - 11.

The foam in soap functions to remove oil or fat from the skin, however if the foam in soap is too high it can make the skin dry, when most of the fat in the skin is lost, it will make the skin more susceptible to irritation, because the fat in the skin is useful as a defense, The top layer of the skin is called the skin barrier, one of the components of the skin barrier is fat. Fat will make the skin barrier tighter, so that bacteria and microorganisms cannot easily enter the body (Imamsyah and Paramita, 2022). The foam height and foam stability tests aim to determine the ability of the preparation to produce foam when shaken. Foam that is stable for a longer time is usually more desirable because foam can help cleanse the body of dirt and microorganisms.

The data in Table 3 showed that the addition of eco enzyme will reduce the bubbling capacity of the soap preparation which indicated from foam height 63.33 ± 1.528 (for F0 soap without eco enzyme) to foam height 55.00 ± 2.000 for F1 soap and foam height 43.33 ± 1.528 for F2 soap. The results of statistical tests with the

Kruskal Wallis test which showed a significant value of 0.027 ($p < 0.05$); which means that there was a significant difference in foam height between soaps treated with eco enzyme with soap without eco enzyme. Further tests showed that the pH of the formula that had a significant difference was the foam height of F0 and F2, while the foam height of F0 and F1 as well as the foam height of F1 and F2 showed no significant differences. The height of good soap foam is in the range 13 – 220 mm (Imamsyah and Paramita, 2022). Based on the data in Table 3, it shows that all formulas meet the requirements for good foam power. Foaming power is influenced by pH, so the lower the pH of the soap, the lower the foaming power produced (Wijana et al., 2009). The greater the concentration of eco enzyme in formula, the less foam will be produced.

4. CONCLUSION

From this research it can be concluded that:

1. Eco enzyme can be used as an additive ingredient for making KOH-based liquid soap;
2. The addition of eco enzyme significantly reduce the pH and the bubbling capacity of the soap formulas; the greater the concentration of eco enzyme in formula caused the lower of the pH and foaming power produced;
3. Testing the physical properties of eco enzyme liquid soap shows that the pH, the height of the foam, as well as the organoleptic characteristics are in accordance with good soap quality standards.

STATEMENT

Thank you to Ministry of Education, Culture, Research and Technology, Directorate General of Higher Education, Research, and Technology, Republic of Indonesia and Bosowa University for funding and facilitating this research, thank you also to all colleagues who have helped in writing this article.

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DEVELOPMENT AND IMPLEMENTATION OF A SMART INSTITUTIONAL PARCEL MANAGEMENT SYSTEM WITH QR CODE SCANNER APPLICATION

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ABSTRACT

Institutional parcel management system is becoming a very important system to manage all the staff parcels received by operators at the frontdesk counter. Institutional parcel management has gone through a very significant evolution from the beginning mainly paper based to become digital and IoT based with supported electronic applications. In this innovation, a newly developed Smart Institutional Parcel Management System Scanner (IPMSS) Application with smart features has been proposed to support the parcel process management significantly. This system is completed with the combination of appsheet, spreadsheet and google form technologies to establish an easy and minimal cost to management system. This system could easily integrate with smartphone and be beneficial with the handphone scanner to input the parcel tracking number with ease and send the message to receivers automatically. This system has been implemented with 5303 proven of good tracking records and still implemented continuously.

KEYWORDS

Parcel Management System; QR Code Scanner Application; AppSheet; barcode scanning

1. INTRODUCTION

In recent years, the increasing complexity of institutional operations and the surge in parcel deliveries have necessitated the adoption of efficient parcel management systems within various organizations as shown in Figure 1. These systems play a crucial role in streamlining the receipt, storage, and distribution of parcels, thereby enhancing overall operational efficiency (Brotcorne et.al., 2019: Hasrunlah et. al., 2023; Aziddin & Ghazali, 2022). There are some latest developments in parcel management systems have been developed by several researchers.

Figure 1: Parcels are need properly management

Juanita Zainudin et al. have developed a Parcel Tracking System Using Barcode Scanner with Verified Notification. The development method of this system uses PHP and JavaScript programming languages in Adobe Dreamweaver platform with MySQL programme as the backend of the system (Zainudin et al., 2021).

Nik Yasmin Nik Yusoff, and Norhanim Selamat have developed a student parcel management system in Kolej Matrikulasi Kelantan (Yusoff & Selamat, 2023). This is a web-based system to record all the parcel received by admin and collected by students. They adopted the Hypertext Preporcessor (PHP) and MySQL database for system development. Besides, Jainari has developed

another web-based Sistem e-Pos for Universiti Malaysia Sabah (UMS) for staffs (Jainari, 2021).

Wahab developed an e-parcel management system which is integrated with Global System for Mobile (GSM) networks (Wahab et al., 2009). Meanwhile, Soon developed a pre-notification parcel tracking system is created so that customers can obtain the latest host location using this system (Kim & Kim, 2018). This paper aims to accomplish the objectives where the customer can obtain the latest host location by using the GPS service on Android devices.

From the above system development, all the innovations are developed for web-based parcel management systems. These systems do not fully utilise the barcode scanner which available in the smartphone for free and not support for both PC and smartphone applications. Hence, in this project, a new Institutional Parcel Management System Scanner (IPMSS) Application is developed which is easily used in smartphone in both android and iOS applications for barcode scanning, and compatible with PC view as well by front desk administrators of institution. This system is completed with automatic notification system as well.

2. METHODOLOGY

In this project, agile method was adopted to design and develop the smart Institutional Parcel Management System Scanner (PMSS) Application. The Agile methodology is a project management approach that involves breaking the project into phases and emphasizes continuous collaboration and improvement. Agile methodology is a software development approach characterized by its iterative and incremental nature, emphasizing flexibility, collaboration, and customer satisfaction. It aims to deliver high-quality software products efficiently by breaking down the development process into smaller, manageable iterations called "sprints." There are several advantages of agile methodology which include flexibility and adaptability, customer satisfaction, faster time to market, improved

quality, increase collaboration and communication and better risk management.

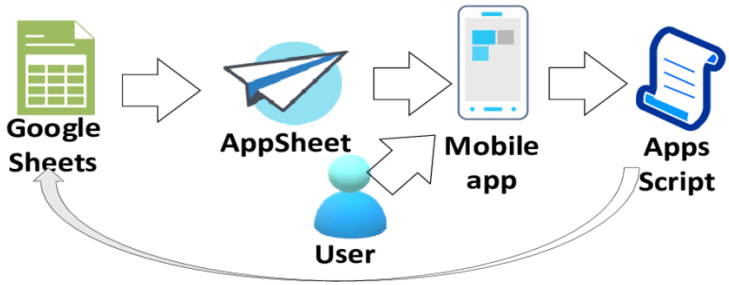


Figure 2: Mobile apps architecture-based AppSheet and Apps Script

The application development is done using Google Appsheet, which has been used to build powerful solutions in application that could simplify work with minimal coding requirements (Keong et al., 2023; Ringgau et al., 2021). Figure 2 shows the Mobile apps architecture-based AppSheet and Apps Script. Besides, Google Spreadsheet and Google Form with addon have been used as database and receiver parcel collection form. Developing an Institutional Parcel Management System with Application using Google AppSheet involves several steps as below:-

Step 1: Sign Up/Login to Google AppSheet account using the user Google credentials.

Step 2: Create a New App: Once logged in, click on the "Create" button to start a new app.

Step 3: Choose a Data Source: AppSheet supports various data sources including Google Sheets, Excel, SQL databases, and more. Choose the appropriate data source for this app.

Step 4: Define Data Structure: Define the structure of the data within the chosen data source. For example, if using Google Sheets, create sheets and define columns.

Step 5: Design the App: Use the AppSheet editor to design the user interface of this app. This involves specifying how data is displayed, forms for data entry, workflows, views, and navigation.

Step 6: Add Functionality: Configure the behavior of this app by adding features such as actions, workflows, and automation. This could include things like adding buttons to perform specific actions, setting up notifications, or integrating with other services.

Step 7: Test the App: Use the built-in emulator to test this app's functionality. Make sure everything works as expected across different devices and screen sizes.

Design framework in Figure 3 shows the important parts of the system development. A smartphone application was developed for the front desk administration with several important buttons, include parcel scanner button, receiver records, stuff details and records of parcel collection. When the barcode of the parcel is scanned by administration, it will trigger an email and send automatically to the receiver as shown in Figure 4. Important information in the receiver emails include the parcel tracking number, receiver name, parcel collection form, and list of parcel receivers.

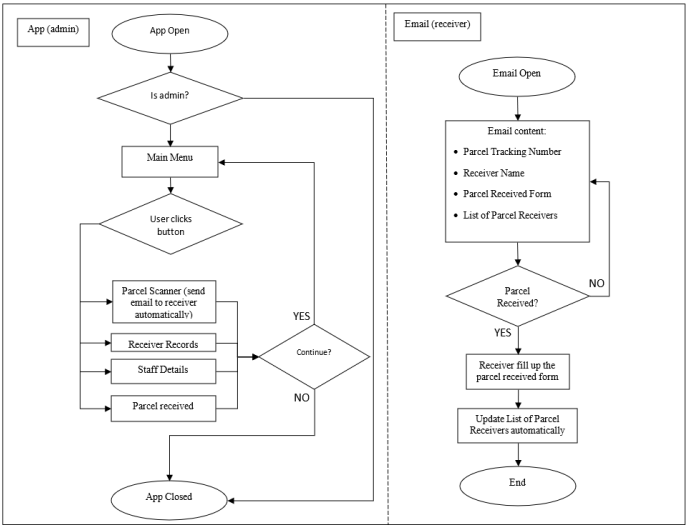


Figure 3: Design framework of Institutional Parcel Management System Scanner (PMSS) Application

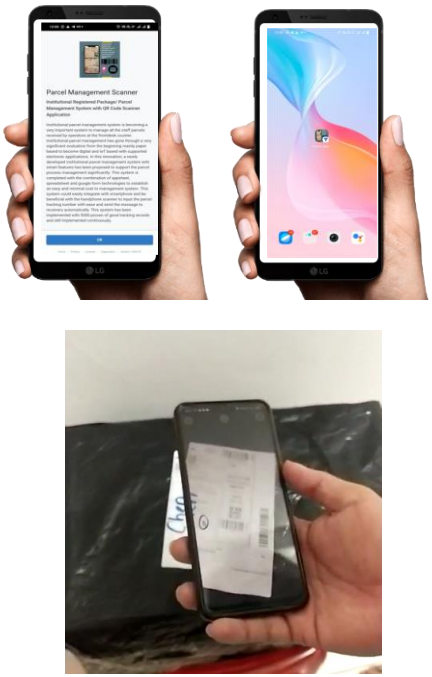


Figure 4: Scan the barcode of the parcel by using this Institutional Parcel Management System Scanner (PMSS) Application

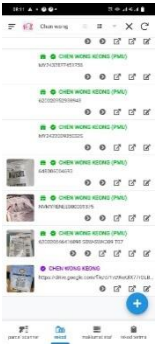
3. RESULT AND DISCUSSION

Figure 5 shows the important buttons and interfaces of the Smart Institutional Parcel Management System Scanner (PMSS) Application which are used by administration to record the all the parcels dropped at the front desk counter. This application has four important buttons which are parcel scanner, records, staff details, and list of collected parcels. Every time when administration received the parcels from parcel runners at font desk, admin could use this application to record the tracking number of the parcel by barcode scanner of the application, insert the receiver's name, and capture the

picture of the parcel all using the application parcel scanning button and save the records as shown in Figure 5(f).

The parcel management system will send the notification via email to parcel receivers automatically later. The second application button as shown in Figure 5 (b), (c), (d) and (e) are all the parcel records have been scanned by admin. From here, admin can easily search the parcel receiver, status of parcels and all the parcel details. The third button is the list of staff name with their email address and the fourth button is the list of parcels which have been collected and updated by receivers. All the data stored at google drive and could be accessed any time anywhere by admin.

(a) Records of all parcels



(b) Search function by name of staff

(c) Details of parcel

(d) Example of record of parcels by name of staff

(e) All the records of parcels by name of staff

(f) Interface for scanning the parcel barcode tracking and name of receiver used by admin

(g) Database of staff and email

(h) Records of collected parcel

Figure 5: Important buttons and interfaces of the Smart Institutional Parcel Management System Scanner (PMSS) Application for administration

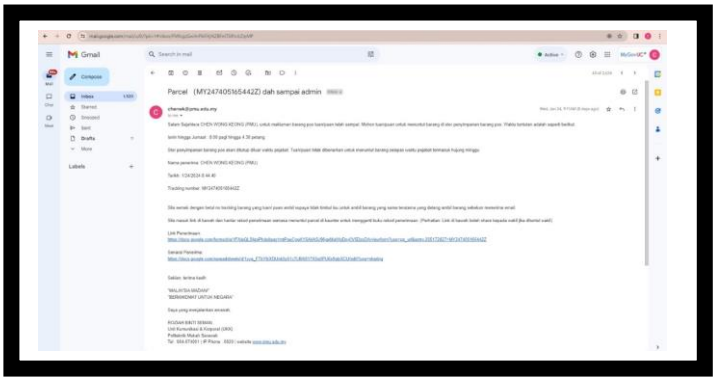


Figure 6: Automatic notification via email to parcel receivers after the details of the parcels are recorded to application by admin

Figure 6 shows one of the examples of automatic notification via email sent to parcel receiver. The content of email included with the details of parcel, parcel collected link and link of receivers is used to remind receivers update the link after parcels collected as shown in Figure 7. Figure 8 shows the number of Recorded Parcel in this First Seven Months from August 2023 until February 2024.

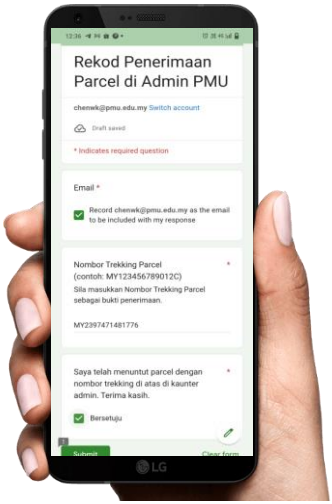


Figure 7: Receivers have to update the parcel status after collected the parcels

Figure 8: Number of Recorded Parcel in this First Seven Months

4. CONCLUSION

In conclusion, the objective of developing a smart institutional parcel management system with handphone application has been implemented successfully. This system has recorded 5303 data with the number of data will be growing day by day and all the parcels have been collected by receiver successfully. This system was developed based on latest technology such as Google AppSheet, google spreadsheet and google form with addon. Admins have used this system easily and notification will be sent to receivers automatically.

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THE EFFECTIVENESS OF UTILIZING *FUN AR* ANDROID-BASED MEDIA TO IMPROVE STUDENT LEARNING OUTCOMES ON FLAT-SIDED SPACE BUILDING MATERIAL FOR CLASS VIII STUDENTS SMP YPPK SANTO ANTONIUS NABIRE

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ABSTRACT

This study aims to determine the effectiveness of utilizing *Fun AR* android-based media to improve student learning outcomes on flat-sided space building material. The type of research conducted is *Pretest-Postest Control Group Design.* In this study there were two groups randomly selected, then given a *pre-test.* After *pre-testing the* two groups, t h e n conducting learning in both classes with the same approach, namely the scientific approach but in the experimental group given special treatment. In this case, the learning activities of flat-sided space building material on the subject of beams in the experimental group using Android *Fun AR* media. Then then give a *post-test to both groups. The post-test* results will be good if there is a significant difference between the experimental group and the control group. The t-test results show that the average *post-test* scores of the experimental and control classes are very significant differences. Learning by using *Fun Augmented Reality* media on flat-sided space building materials sub subject matter of beams is more effective than learning without the use of media. Learning outcomes of students in grade VIII SMP YPPK Santo Antonius Nabire in the cognitive domain using *Fun Augmented Reality* media with an average of 55.16 higher and significant than learning without *Fun Augmented Reality media* with an average value of 42.10.

1. Introduction

The role of education is very important in developing abilities and character to create students who are knowledgeable, faithful, moral, healthy, capable, creative, independent. This is in line with the content of 21st century learning which emphasizes the ability to think critically, solve problems, be creative, innovative, communicative, collaborative. Referring to these demands, mathematics lessons applied in schools should be able to answer the existing demands to present active, creative and innovative learning in the classroom so that the hope is to produce a generation that is ready to compete in global competition. The application of active, creative and innovative learning is certainly a challenge for every educator in an effort to present meaningful mathematics learning for students.

The issue of education in Papua never seems to find the right solution. The 20% budget from the state budget does not seem to be the answer to every problem that occurs in Papua's Cendrawasih Earth. The problem of education in Papua is like a wet and intertwined tangle of threads. wrapped around irregularly. Preparing a generation of Papuans who are reliable and able to compete in the challenges of the 21st century is still a problem that requires innovative efforts and breakthroughs. Based on the experience experienced by the author in the field, learning mathematics is still far from the demands of 21st century learning. Learning still adopts the old way, where the teacher is still the only source of knowledge. Students are still burdened with a lot of practice problems without teaching them

how to understand and find the concept of the material being taught. For example, in the Flat-Sided Spaces material, many teachers still teach limited to describing the types of spaces on the blackboard equipped with mathematical equations of these shapes. Teachers only teach the area and volume of the shapes in the form of memorization and then ask students to do the practice problems in the package book. Students are not involved in finding or discovering concepts about the material. This then has an impact on the learning outcomes obtained by students in Mathematics. The results of all students' tests at the End of Semester Assessment (PAS) in the 2022/2023 school year, if averaged, only obtained a score of 45 out of a maximum score of 100. Seeing the achievement of student results for Mathematics, of course, is very concerning and if left unchecked will have an impact on the readiness of students to enter the competitive world of work in the next few years.

Changes in learning patterns are needed to overcome these conditions. The learning pattern according to the opinion of Stigler, Fernandez and Yoshida (Westwood, 2000: 4) is that when learning takes place students are not passive in receiving knowledge but students actively construct knowledge. Teachers provide the widest possible opportunity for students to develop their abilities by constructing the knowledge learned so that learning mathematics is the result of their own thinking and not the result of the training process. In addition to changes in learning patterns, the utilization of media in learning is very necessary. This is in line with the opinion of Pujiati and Hidayat (2015: 32) that the use of media in the teaching and learning

process has an important role. Media can help students to more easily understand abstract mathematical concepts and increase students' motivation and interest in mathematics.

The knowledge characteristics of students at SMP YPPK Santo Antonius Nabire are diverse. There are about 30% of students who come from the interior of Papua where at the previous level of education they did not get optimal educational services due to limited facilities and educators. This causes their basic math skills to be quite low so that they have difficulty in following math lessons in class. The selection of interesting learning patterns and media is needed to help them build and increase mathematical knowledge. However, based on the author's observations both in Antonius Junior High School and in other junior high schools in Nabire district, the average math learning still adopts the old way. Media utilization and the application of interesting teaching patterns have not been optimally carried out. Especially in the utilization of ICT-based learning media. Not many educators were found using ICT media in the process of teaching and learning activities.

The use of technology is only limited to the fulfillment of learning administration. Teachers assume that the use of media, both digital and non-digital, will cause preparation in teaching and learning activities to be longer and more hassle. In addition, the factor of limited ideas in creating interesting media is the cause of not optimal media utilization.

Media is a tool in the learning process that serves to clarify the meaning of the message conveyed so that learning objectives can be achieved. The media contains messages as

learning stimulants and can foster learning motivation, so that students do not become bored in achieving predetermined learning goals.

Along with the times, innovations in the utilization of learning media in the classroom have developed everywhere. The use of technology and communication can be utilized in the teaching and learning process. The use of technology can be in the form of *e-learning*, tablet computers, PCs, social media and the latest is the use of *game* applications*,* virtual, the use of mobile devices and *Augmented Reality (AR)* Danakorn Nincarean et al., 2013). The use of AR learning media has its own advantages, which are easily accessible using Android-based mobile *phones* and tablet computers. The combination of technology that visualizes 3D images into smartphone devices using *Augmented Reality* with the help of *markers* will make it easier for students to understand the shape of the building space and the elements of the building space.

2. Literature Review

2.1 Math Learning

Learning can be defined as a process undertaken to assist learners in achieving learning objectives (Nitko & Brookhart, 2011: 18). Bell (1981: 167) specifically emphasizes mathematics learning which argues that it requires an understanding of mathematical materials, cognitive and affective goals of mathematics and the types of strategies used to create effective and efficient mathematics learning. In addition, the *National Coucil of Teachers Mathematics/NCTM*

(2000: 20) states that effective mathematics learning requires an understanding of what students know and need to learn. According to Borich (2007:29) math learning fundamentally consists of three parts that need to be considered, namely:

1. *Instructional materials*, using applications and experience-oriented activities and the use of media during the learning process that can help students' perseverance.
2. *Instructional content*, maximizing the review of learning applications during mathematics learning through the use of student worksheets, *handouts,* and problem sets with different levels of difficulty.
3. *Instructional organization*, first emphasizes complete class or large group learning during mathematics learning. Then it gradually reduces guidance and leads to independent student activities.

Based on the above opinion, mathematics learning should try to involve students actively through the use of various media, strategies, approaches so that students are able to build knowledge through the learning experiences they get.

2.2 Learning Outcomes

According to Syah (2014, p. 37), learning outcomes are the abilities that students have after receiving learning experiences. Learning outcomes according to Supeno (2003, p. 34) are the results achieved during the assessment to determine the mastery of students over the results taught so that a picture of achievement is obtained covering cognitive, affective, and psychomotor aspects. Sudjana in Misterchand (2013) suggests that learning outcomes is a change in behavior that includes

cognitive, affective, and psychomotor fields owned by students in receiving learning experiences.

From the above definitions, it can be concluded that learning outcomes are a process of behavioral change that includes cognitive, affective, and psychomotor domains that involve effort and ability after going through a process of activities and exercises expressed in numbers, symbols or other forms of consideration or value.

2.3 *Fun Augmented Reality* Learning Media

Augmented Reality (AR) is a technology that can combine 2D (two-dimensional) or 3D (three-dimensional) virtual objects and then the virtual objects are projected in a real environment (Azuma, 2013, p. 2). The utilization of this technology in education is still very minimal. It can be said that the use of this application is still very rarely applied in learning for schools in Papua. This is very amazing and will certainly motivate students to be more actively involved in learning because they find new things that they have never encountered before. AR technology can be operated on *smartphones* (*android* or *ios*) and sometimes there are some applications that can be operated using a laptop / PC.

The stages in utilizing *fun augmented reality* media that will be used in learning activities are as follows.

1. First Stage

The teacher divides the students into groups. Then the teacher introduces and explains how to use the AR application that has been installed on each student's *smartphone*. In the *Augmented*

Reality menu, *it* will help students to find information about the material they will learn in this case the material of flat-sided space building. Students simply touch the *Augmented Reality* menu then *scan* the *marker* paper that has been affixed and on the screen of the student's *smartphone* will be presented an explanation of the material of building space. For the learning menu, there are several choices of space building materials. Students simply select one of the menus (materials) and will be presented in the form of a video on the student's *cellphone* about solving problems related to the space that will be studied.

The following is the menu display on the application that has been *installed* on the cellphone of each group or student.

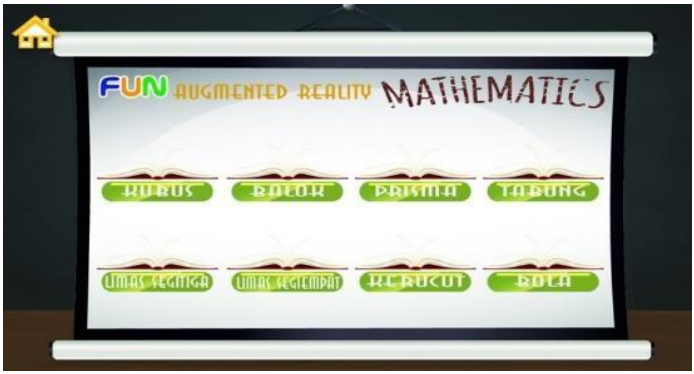

Figure 1. *Fun Augmented Reality* Menu Display

2. Second Stage

The teacher asks questions and problems in the form of student worksheets that will be discussed and solved in groups. Each group is asked to find answers to the problems given by looking for answers outside the classroom by scanning markers that have been attached to the school environment using the AR application that has been installed. From the *scanned markers,* students can get information about the questions contained in the worksheet. The following are examples of markers that will be scanned by each group.

Figure 2. AR Media Marker

3. Third stage

At this stage the teacher then asks students to discuss and report the answers they have obtained through the worksheets that have been distributed to each student group. Students were seen to have high enthusiasm and curiosity about the material they were discussing. Some even said "I will study math diligently if this is how I learn".

Figure 3: Student activity in groups

4. Fourth Stage

After students present the results of their discussions together, the teacher then asks each student to use the learning menu contained in the *Augmented Reality* application. In the learning menu there are videos - video explanations of how to solve problems - problems related to flat-sided space. In this video will be presented an explanation of the problem solving.

Video Explanation of Exercise Questions

3. Research Methods

3.1 Type of Research

The type of research used is quantitative research with experimental methods categorized as *Pre-test-Post-test Control Group Design.* There are two classes in this study that will be randomly selected as experimental classes and control classes.

Both classes will be taught with the standard method of the 2013 curriculum, namely the scientific approach to the process, but the experimental class is given special treatment by adding *Fun Augmented Reality* media.

3.2 Time and Place of Research

The type of research used is quantitative research with experimental methods categorized as *Pre-test-Post-test Control Group Design.* There are two classes in this study that will be randomly selected as experimental classes and control classes. Both classes will be taught with the standard method of the 2013 curriculum, namely the scientific approach to the process, but the experimental class is given special treatment by adding *Fun Augmented Reality* media.

3.3 Research Design

The type of research conducted was *Pretest-Postest Control Group Design.* In this study there were two groups randomly selected, then given a *pre-test.* After *pre-testing the* two groups, then conducting learning in both classes with the same approach, namely the scientific approach but in the experimental group given special treatment. In this case the learning activities of flat-sided space building material sub pokok bahasana beam in the experimental group using *Fun Augmented Reality* media. Then next give a *post-test to both groups. Post-test* results will be good if there is a significant difference between the experimental group and the control group. The design is as follows

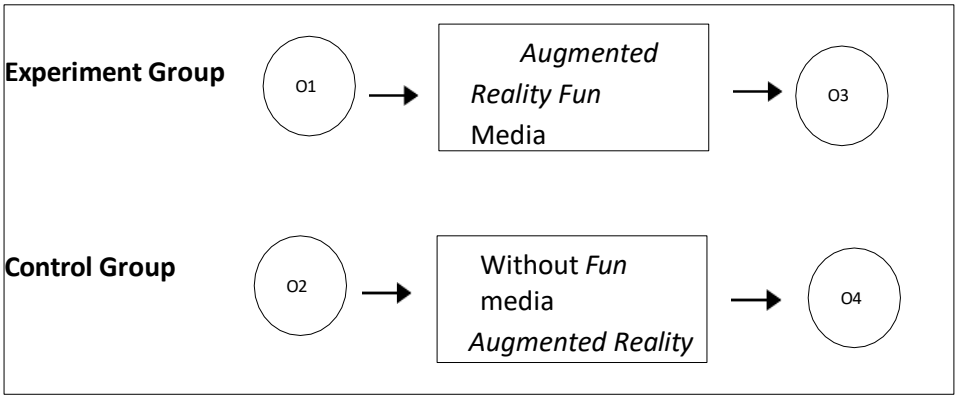

Figure 5. Research design

Description:
O1 = *Pre-test* in the experimental group O2 = *Pre-test* in the control group
O3 = *Post-test* in the experimental group O4 = *Post-test* in the control group

3.4 Research Population and Sample

The population in the study was class VIII students in the 2022/2023 academic year consisting of 5 classes with a total of 160 students.

The sampling technique used was *cluster random sampling,* which is taking existing classes randomly. Class VIII Petrus Kanisius (31 students) was designated as the experimental class and class VIII Teresa (31 students) as the control class.

3.5 Data Analysis Technique

The collected data were analyzed using descriptive statistics. The data obtained is described according to each variable. Before the research data is analyzed statistically, it is necessary to test the requirements which include normality test and homogeneity test. Test The normality test was conducted using the *Kolmogorov Smirnov test,* while the homogeneity test used the *Levene test* with the help of the *SPSS 16 for Windows* statistical program. Hypothesis testing in the study used the t-test which aims to determine the average difference (mean) of the two groups. The objectives in hypothesis testing are:

1. Knowing whether there is a significant difference in student learning outcomes taught with media *Fun Augmented Reality* with students taught without media.
2. Knowing whether there is a significant difference in initial learning outcomes (*pre-test)* between the control class and the experimental class.
3. Knowing whether there is a significant difference in student learning outcomes before and after learning activities without *Fun Augmented Reality* media in the control class.
4. Knowing whether there is a significant difference in student learning outcomes before and after learning activities with *Fun Augmented Reality* media in the experimental class.

The summary of the alternative hypothesis is made in the following statistical form, namely:

$$H0 : \mu 0 = \mu 1$$

$$Ha: \mu 0 \neq \mu 1$$

To test the above hypothesis using the *Paired-Sample T-Test* on the statistical program
SPSS 16 for Windows.

4. Research Results and Discussion

As explained earlier, this study used *Pre-test Post-test Control Group Design.* Class VIII Petrus Kanisius (31 students) was designated as the experimental class and class VIII Teresa (31 students) as the control class. The treatment given to the two groups is different, where class VIII PK (experimental) is taught with *Fun Augmented Reality* media and class VIII T (control) with no media. The results of the *pre-test* and *post-test* can be seen in the following summary table obtained using SPSS 16.

Table. 1 Summary of descriptive statistics

	N	Lowest	Highest	Average	Std. Deviation
Pre-Test Control Class	31	10	60	30,00	14,318
Post-Test Control Class	31	15	70	42,10	15,372
Experimental Class *Pre-Test*	31	5	55	25,00	12,221
Post-Test Experiment Class	31	30	80	55,16	16,722

Based on the table above, it can be seen that for the

control class *pre-test the* lowest score is 10 and the highest score is 60 with an average of 30 and a standard deviation of 14.318, while the experimental class the lowest score is 5 and the highest score is 55 with an average of 25 and a deviation of 14.318.

standardized 12.221. For the control class *post-test,* the lowest score was 15 and the highest score was 70 with an average of 42.10 and a standard deviation of 15.372, while the experimental class had the lowest score of 30 and the highest score of 80 with an average of 55.16 and a standard deviation of 16.722. From these data, it can be seen that the difference in the average value of the *post-test* is higher than the average value of the *pre-test* in both the control class and the experimental class. The *pre-test* results of the two groups were not too different, so these two groups were very suitable for research. While the *post-test* results of the two groups showed a difference between the control and experimental classes. This means that the treatment given to the experimental class has an impact or influence on improving student learning outcomes. So based on this data, it is then continued with the t test to see the significance level of the difference.

The hypothesis test carried out aims to see if there is a difference between the control and experimental classes both *pre-test* and *post-test. The* following is a summary of the t-test results for the hypothesis:

Table 2. Summary of t test results

	T	Sig. (2 tailed)
Experiment-Control *Pre-test*	-1,603	0.064
Control *Post-test-Pre-test* Control	4.708	0
Post-test Experiment-Pre-test Experiment	14.034	0
Experiment *Post-test* - Control *Post-test*	3.517	0.001

Based on the table above, it can be seen that in the first row the t value is -1.603 at p = 0.064. This means that there is no difference between the means of the control group and the experimental group in the *pre-test.* In the second row, the t-test results show that the t-statistic price is 4.708 at p = 0.000. This means there is a significant difference in the average of the control group in the *pre-test* and *post-test*. In the third row, the t value = 14.034 at p = 0.000. This indicates there is a significant difference in the mean of the experimental group in the *post-test* and *pre-test.* The fourth row shows that the t value is 3.517 at p = 0.001. This means there is a difference between the means of the control group and the experimental group in the *post-test.*

Based on the results of data analysis, it shows that at the beginning of the study the abilities of the two groups (experimental and control) were relatively the same. The t-test results show that there is a difference between the mean of the initial test and the mean of the final test for each group. This means that the learning carried out in both classes is able to improve the learning outcomes of both classes. However, when

compared between the average *post-test* scores of the experimental and control classes, there is a very significant difference. This means that the use of *Fun Augmented Reality* media has a very significant effectiveness.

The use of *Fun Augmented Reality* media in the experimental class is able to improve student learning outcomes on the material of flat-sided flat-sided space building blocks. *Fun Augmented Reality* media is able to visualize space directly without thinking abstractly again. With *Fun Augmented Reality*, students can identify the elements contained in flat-sided space specifically beams so that they can be remembered and understood more deeply. The activeness of the students and the atmosphere of the class is also an indicator of the success of this study, where in the control class students look very bored, passive and bored in participating in learning because the teacher only lectures, writes formulas and practice problems alone. This was in stark contrast to the experimental class, where the students were so active and excited to assemble and identify the parts contained in the blocks.

so that learning takes place very pleasantly. There were even some students who commented that "if tong pu math teachers had taught like this, tong pu math skills would have been solid (Papuan dialect)". This means that if students are taught with a variety of fun methods, their abilities will be explored and their interest in math will increase. But sometimes the labels "stupid" and "lazy to know" that are often uttered from the mouths of teachers seem to be a barrier for teachers to provide learning that stimulates students' abilities.

5. Conclusions and Suggestions

5.1 Conclusion

Based on the results of the research and discussion, it can be concluded that:

1. Learning by using *Fun Augmented Reality* media on the material of flat-sided space building beam sub-topic is more effective than learning without the use of media.
2. The learning outcomes of 8th grade students of SMP YPPK Santo Antonius Nabire in the cognitive domain using *Fun Augmented Reality* media with an average of 55.16 is higher and significant than learning without *Fun Augmented Reality* media with an average value of 42.10.

5.2 Advice

1. The use of *Fun Augmented Reality* media in learning mathematics material flat-sided space building sub subject matter of beams can be applied to improve student learning outcomes.
2. There needs to be further evaluation in the development of *Fun Augmented Reality* media.

6. Acknowledgments

The authors would like to thank all those who have helped in the completion of this article. In particular to the family, principal, fellow teachers and students of SMP YPKK Santo Antonius Nabire, Papua.

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THE INFLUENCE OF VIRTUAL PRACTICUM MEDIA BASED ON INDUSTRIAL INFORMATION SYSTEM PRODUCTS ON IMPROVING STUDENT COMPETENCE

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ABSTRACT

The problem in this study is that the visual practicum media based on industrial information system products used in the learning of information system analysis and design courses at Akba University of Technology Makassar (UNITAMA) has become a standard practicum media for collaboration between UNITAMA and Industry as an effort to improve student competence in the field of industry-based information system development science. This study is a quantitative research with a population of 30 students who were followed by a formative test of learning outcomes with 100 questions divided into 5 (five) main cognitive domains of the Industry-Based Information System Analysis and Design Course, namely; 1). Knowledge of Information Systems. 2). System Development Knowledge. 3). Knowledge of Analysis. 4). Design Knowledge and 5). Industry Knowledge. Formative tests are carried out in two stages before treatment (pre-test) and after post-test treatment. The test result data was analyzed by paired t-test techniques on pre-test and post-test treatment using the SPSS application. The results of the para 5 test data (cognitive domain) with a significance value of 0.000 each proved that there was a difference in test results before and after being treated. It is concluded that the application of virtual-based practicum in the analysis and design of industry-based information systems has improved student learning outcomes.

KEYWORDS

Influence, Practicum Model, Information System, Industry, Competence, Virtual Lab.

1. INTRODUCTION

There are a large number of educational initiatives tailored to teach the students about media literacy; However, few provide hands-on learning settings to improve literacy progress (Zou et al., 2024). The development of learning models, especially digital-based ones, has penetrated the world of education. It is a necessity for education providers to continue to develop graduate competencies with innovations in learning models that are in accordance with the latest industry needs and the use of the latest learning technology. According to (Meilani et al., 2020) the lack of innovation in learning is the cause of low student learning outcomes. The demands of teachers/lecturers to continue to develop learning strategies, especially by utilizing digital media, were also expressed by (Anjaningrum, 2018) who stated that teachers/lecturers are required to try to create a learning experience for students by optimizing all existing learning resources.

One of the learning models that the government continues to encourage with various efforts to approach the model is the link and match of graduates produced by educational institutions with industry needs. However, it must be acknowledged that the profound impact of technology and the importance of placing emphasis on the digital skills and proficiency of students from the beginning, many countries have integrated digital capabilities into their educational frameworks (Zou et al., 2024). With the existence of a digital-based learning model called the Learning Management System (LMS) or commonly called e-learning, it has become the best solution for the latest learning model. E-learning is a commonly used information system designed

to optimize efficiency by saving time and resources in the implementation of academic tasks (Setiawan et al., 2019).

The demand for innovation in e-learning-based learning models has been able to integrate industrial product-based learning systems. as in the work (Gatot & Abdul, 2024) which has integrated virtual lab learning media with the Teaching Factory learning model where in this model information system products are used as direct learning resources as well as products that will be developed within the scope of education.

Based on the learning model developed in the research (Gatot & Abdul, 2024), it is possible that there is an influence on improving the cognitive skills of students of industry-based information system analysis and design courses. To prove the need for a comprehensive test of students in the learning process based on the virtual practicum model.

Collaboration-based applications between universities and industry aim to bridge the need to increase student competence, one of which is by adjusting the abilities they get in college with the needs of the world of work, in this case the industrial world.

This study aims to determine the influence on improving student learning outcomes with the treatment of a virtual lab-based practicum model. The evaluation was carried out to ensure that the learning model developed (Gatot & Abdul, 2024) can indeed improve the teaching results of students of information system analysis and design courses as stated by (Ulfah, 2019) that a proficient education and training scheme must have the ability to strengthen and maintain proficiency both in quality and quantity.

2. METHODOLOGY

This research was carried out using a quantitative approach, because in this study used data processed using statistical methods. The

quantitative approach is research based on calculations that use numbers starting from data collection, interpretation of the data, as well as the appearance and results (Priyono, 2008). Quantitative research methods can be interpreted as research methods based on the philosophy of positivism used to research on populations and samples, data collection using research instruments, quantitative data analysis, with the aim of testing hypotheses that have been applied (Sugiyono, 2016). The object of the research is all students participating in the analysis and design of industry-based information system learning courses. There are 5 (five) cognitive domains that will be tested, including; (1). Knowledge of industrial information systems. (2). Knowledge of industrial information system development. (3). Knowledge of industrial information system analysis. (4). Knowledge of industrial information system design and (5). Knowledge of the industrial world. The data was taken directly from the results of the pre-test and post-test tests of the same question content with different treatments.

There are 20 formative test questions each in each cognitive domain. The parametric paired sample t-test was carried out after the test data results were carried out as a normality test as a condition for parametric testing. In the normality test, the Kormogorov-Smirnov formula is used.

3. RESULT AND DISCUSSION

The data obtained in this study are data from the formative test of virtual practicum media conducted with pre-test and post-test tests to 30 students before and after the treatment of virtual practicum media. A formative test was carried out to determine the influence on student learning outcomes before and after using virtual practicum media in the practicum of the information system analysis and design course. Before being analyzed on the results of the previous data test in the

normality test, the basic normality test for decision-making was used by Kormogorov-Smirnov where if the significance value was greater than 0.05 then the data was normally distributed, if the significance value was less than 0.05 then the data was declared not normally distributed (Ahad et al., 2011).

Table 1 Normality of Industrial Information System Knowledge Test Data

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
PrePost		Statistic	df	Sig.	Statistic	df	Sig.
Hasil	1	.137	30	.158	.936	30	.072
	2	.151	30	.081	.931	30	.052

Table 2 Normality of Industrial Information System Development Test Data

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
PrePost		Statistic	df	Sig.	Statistic	df	Sig.
Hasil	1	.142	30	.127	.934	30	.062
	2	.148	30	.093	.935	30	.067

Table 3 Normality of Data Test Knowledge of Industrial Information System Analysis

Tests of Normality

	PrePost	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Hasil	1	.146	30	.105	.961	30	.327
	2	.150	30	.082	.939	30	.086

Table 4 Normality of Industrial Information System Design Test Data

Tests of Normality

	PrePost	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	*Sig.*
Hasil	1	.152	30	.076	.941	*30*	*.097*
	2	.148	30	.093	.946	*30*	*.129*

Table 5 Normality of Industry Knowledge Test Data

Tests of Normality

	PrePost	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.

Hasil	1	.150	30	.083	.926	30	.039
	2	.149	30	.085	.927	30	.042

Table 6 Normality Test Analysis

Cognitive Domain	Significance Value of Normality Test	
	Pre-test	Post-test
Industrial Information System Knowledge	0.158	0.081
Knowledge of Industrial Information System Development	0.127	0.093
Knowledge of Industrial Information System Analysis	0.105	0.082
Industrial Information System Design Knowledge	0.076	0.093
Industry World Knowledge	0.083	0.085

From the results of the normality test in 5 (five) cognitive domains of the industry-based information system analysis and design course, a significance value above 0.05 was obtained, which proved that the test data was normally distributed. After the normality test was carried out, the test data results were carried out parametric paired sample t-test to find out if there was a difference in learning outcomes before and after the treatment. The basis for decision-making is if the significance value (2-tailed) is less than 0.05 then Ho is rejected and Ha is accepted conversely if the significance value (2-tailed) is greater than 0.05 then Ho is accepted and Ha is rejected (Gatot & Abdul, 2024).

Table 7 Paired Samples T-Test Knowledge of Industrial Information Systems

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre Test - Post Test	-31.16667	8.87493	1.62033	-34.48062	-27.85271	-19.235	29	.000

Table 8 Paired Samples T-Test Knowledge of Industrial Information System Development

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre Test - Post Test	-23.66667	12.58991	2.29859	-28.36782	-18.96552	-10.296	29	.000

Table 9 Paired Samples T-Test Knowledge of Industrial Information System Analysis

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre Test - Post Test	-24.83333	14.23227	2.59844	-30.14775	-19.51892	-9.557	29	.000

Table 10 Paired Samples T-Test Knowledge of Industrial Information System Design

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre Test - Post Test	-26.83333	10.86622	1.98389	-30.89085	-22.77582	-13.526	29	.000

Table 11 Paired Samples T-Test Industry Knowledge

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre Test - Post Test	-29.66667	10.98065	2.00478	-33.76691	-25.56642	-14.798	29	.000

Table 12 Analisis Paired Samples T-Test

Cognitive Domain	*T- test*	
	Mean	Sig(2-tailed)
Industrial Information System Knowledge	-31.166	0.000
Knowledge of Industrial Information System Development	-23.666	0.000
Knowledge of Industrial Information System Analysis	-24.833	0.000
Industrial Information System Design Knowledge	-26.833	0.000
Industry World Knowledge	-29.666	0.000

Based on the analysis of test data with the fifth paired sample t-test, the cognitive shutter shows that the overall Sig(2-tailed) value is at 0.000, the value is less than 0.05, as a decision-making requirement in the paired sample t-test, if the significance value (2-tailed) is less than 0.05, then Ho is rejected and Ha is accepted, thus it can be concluded that there has been an increase in student knowledge in 5 (five) cognitive aspects of the system analysis and design course. industry-based information after treatment.

4. CONCLUSION

This study aims to determine the influence on the improvement of student learning outcomes after the practice of the virtual-based practicum model. By analyzing the training test data before and after the implementation of the virtual-based practicum model. Based on the results of the analysis of the test data, it was found that there was a significant improvement in student learning outcomes after the treatment of the model with the results of the t-test on 5 (five) aspects

of knowledge. All aspects tested received a significant improvement value with the results of the t-test analysis of the overall aspect getting a value of 0.000 less than 0.05 which means that Ho was accepted and Ha was rejected.nThis study has contributed to the measurement of the utilization of virtual-based practicum learning media in the industrial information system analysis and design course. This finding adds important implications to the application of industrial product-based learning models to achieve maximum results in student knowledge.

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THE EFFECT OF *ONLINE* LEARNING MEDIA (EDMODO) ON STUDENT LEARNING OUTCOMES ON THE MATERIAL OF THE DIGESTIVE SYSTEM IN HUMANS

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ABSTRAK

Jenis Penelitian yang digunakan dalam penelitian ini adalah penelitian eksperimen semu (*quasy experiment*) yang menggunakan desain *One-Group Pretest- Posttest Design* yang bertujuan untuk mengetahui Pengaruh Penggunaan Media Pembelajaran *Online* Melalui Edmodo Terhadap Hasil Belajar Siswa Kelas XI MIA 3 SMA Negeri 3 Gowa Pada Materi Sistem Pencernaan Pada Manusia. Populasi dalam penelitian ini adalah kelas XI MIA SMA Negeri 3 Gowa yang terdiri dari 7 kelas. Sampel penelitian ini yaitu kelas XI MIA 3 yang dipilih secara *purposive sampling*, variabel penelitian ini terdiri dari variabel bebas yaitu pembelajaran *online* sedangkan variabel terikat yaitu hasil belajar siswa. Teknik pengumpulan data dilakukan dengan menggunakan pretest dan posttest dalam bentuk pilihan ganda sebanyak 30 soal yang terkait dengan materi sistem pencernaan pada manusia. Teknik analisis data menggunakan analisis statistik deskriptif dan analisis statistik inferensial dengan bantuan SPSS (*Statistical Product And Service Solutions*) versi 24. Hasil penelitian penunjukkan nilai rata- rata pretest siswa 39,23 dengan standar deviasi 12,635 dan nilai rata-rata posttest adalah adalah 81,10

dengan standar deviasi 8,853. Hasil uji paired sample t-test, pada pretest yaitu sig 0,47 dan posttest 0,42 besar dari 0,05. Hal ini berarti bahwa H_o ditolak dan H_1 diterima, dengan demikian dapat dikatakan bahwa terdapat pengaruh media pembelajaran *online* menggunakan edmodo terhadap hasil belajar siswa kelas XI MIA 3 SMA Negeri 3 Gowa.

KATA KUNCI

Pembelajaran Online, Edmodo, hasil belajar.

ABSTRACT

the type of research used in this research is quasy experiment research using the One-Group Pretest-Posttest Design which aims to determine the effect of using online learning media through Edmodo on the learning outcomes of Class XI MIA 3 students in SMA Negeri 3 Gowa. In the Digestive System Matter in Humans. The population in this study was class XI MIA SMA Negeri 3 Gowa which consisted of 7 classes. The sample of this research is class XI MIA 3 selected by purposive sampling, the research variable consists of independent variables, namely online learning, while the dependent variable is student learning outcomes. The data collection technique was carried out by using a pretest and posttest in the form of multiple choice of 30 questions related to the digestive system material in humans. The data analysis technique used descriptive statistical analysis and inferential statistical analysis with the help of SPSS (Statistical Product and Service Solutions) version 24. The results showed that the students' pretest mean score was 39.23 with a standard deviation of 12.635 and the mean posttest score was 81.10. with a standard deviation of 8.853. The results of the paired sample t-test, at the pretest were sig 0.47 and posttest 0.42 were greater than 0.05. This means that H_o is rejected and H_1 is accepted, thus it can be said that

there is an effect of online learning media using edmodo on the learning outcomes of class XI MIA 3 SMA Negeri 3 Gowa.

KEYWORDS

Online Learning, learning outcomes.

1. Introduction

Education in the digital era 4.0 is very beneficial for the world of teacher and student education by using technological devices as a means for learning. Currently, the application of technology is comprehensive in the educational environment which aims to help improve the quality of learning virtually which can be accessed via an internet connection for free by all users. Students are now more interested in learning that uses technology. The use of technology as a web-based or online learning model in this era is effectively used in combining both in-person meetings and online learning meetings.

The development of education in Indonesia has changed from year to year. Where in the fundamental changes in terms of curriculum for each level of education and in terms of learning patterns applied in each school. The rapid development of the world of education can spur schools to implement educational patterns in various fields (Handayani, 2015). Education is developed by improving the technologies used in education. One of the results of technology that has been utilised in the world of education is media or learning tools and resources. Learning resources that are designed or intentionally created or used to assist the teaching and learning process. For example films, videos, slides, applications and others, all of which are deliberately designed for the benefit of teaching activities to convey information.

The learning process in schools today is inseparable from the role of information technology. This can be seen from the activities of teachers and students in using computers and the internet at school. Whether for writing reports, making test questions, collecting assignments or as a learning system model. In education we recognise the terms learning and learning. Learning is a complex process that occurs in all people and lasts a lifetime, from the time he was a baby to the grave later. One sign that someone has learned is a change in behaviour in him. These behavioural changes concern both changes in knowledge (cognitive) and skills (psychomotor) as well as those concerning values and attitudes.

Media in a narrow sense means the material component and the tool component in the learning system. According to Hamidjojo, what is meant by media is all forms of intermediaries used by people who spread ideas, so that the idea reaches the recipient. Meanwhile, according to McLuhan, it provides a limitation which essentially means that the media is a means called a channel, because in essence the media has expanded and extended the human ability to feel, hear and see within a certain distance and time limit, now with the help of the media these limits have almost become non-existent. And then according to Blacks and Hoalsen argue that the media is a communication channel or medium used to carry or convey a message, where the medium is a way or tool with which a message travels between the communicator and the communication (Miftah, 2013). The existence of an internet connection can indirectly have a positive effect on the world of education, namely learners can easily access information needs to support materials and materials relevant to the learning needed. According to Rulviana, 2018 Explains that, the nature of the internet that can be contacted at any time, means that students can take advantage of educational programs provided on the internet network at any time according to their free time so that the

space and time constraints they face to find learning resources can be overcome.

Edmodo is a free service that allows lecturers to create and maintain their own classroom community safely. According to SEAMOLEC, Edmodo is a social media platform that is often described as Facebook for schools and can do much more as needed. Edmodo was developed based on the principles of group-based classroom management as well as social media (Dharmawati, 2017). The development of information technology has changed the teaching-learning style from passive learning to active learning and from traditional classroom models to innovative digital-based classroom models.

Based on the observations made by the researchers, information was obtained that SMAN 3 Gowa, located in Bontonompo District, Gowa Regency, is one of the high schools that has achieved an A accreditation score. Certainly with a good accreditation value, the availability of school facilities and infrastructure that support learning activities at SMAN 3 Gowa is also good and adequate. For the research subject, the researcher chose students of class XI IPA 3 as the reason XI IPA 3 is one of the classes that use edmodo as a learning medium for science or biology subjects. Where science or biology subjects are one of the lessons that access a lot of images, theories and videos. Through this subject, students are expected to be able to understand the learning well.

Edmodo has three functions in the learning process, namely replacement, companion and complementary functions. Each teacher chooses to use edmodo for a function that is tailored to the needs of their class. Related to the use of edmodo as an online learning media, both students and teachers have almost the same expectations, namely wanting the learning process with edmodo to run well and schools can support it by providing better wifi facilities and also

providing special laboratories so that it can facilitate the e-learning process. Based on the above background, the researcher is interested in conducting research with the title 'The Effect of Edmodo Online Learning Media on Student Learning Outcomes of Class XI Students of SMAN 3 Gowa on Digestive System Material in Humans'.

2. Research Method

The research method used in this study is the quasi-experimental method or pseudo-experiment. This method has a control group, but it cannot function fully to control external variables that affect the implementation of the experiment. This method is used because in reality it is difficult to get objects that can be controlled in research. The type of design used is Quasy Experiment with One-Group Pretest- Posttest Design. According to Sugiyono (2012: 110) One-Group Pretest-Posttest Design is a technique to determine the effect before and after treatment. The population in this study were all students of class XI SMA Negeri 3 Gowa which was divided into 3 classes. The sample used consisted of two classes that had the most similar characteristics. The sampling in this study was carried out by purposive sampling , namely class XI IPA 3 as an experimental class where the number of students was 30 people.

The use of Edmodo learning media is the use of learning media using a web enhanced course model, namely Edmodo, as a support for improving the quality of teaching and learning activities in the classroom. This learning media is applied to the experimental class, namely class XI IPA SMAN 3 Gowa, where the material taught is the material of the digestive system in humans with an allocation of time of 5 meetings, 3 times for learning and 2 meetings for learning evaluation. Learning outcomes are one of the variables in this study, namely the type of dependent variable. Learning outcomes are obtained from the total score or value obtained by students after the

use of edmodo media is applied. In this study, learning outcomes can only be measured from the cognitive aspect, namely the ability to think, know and solve problems on the material of the digestive system in humans.

The research instrument is a tool used to measure observed natural and social phenomena (Sugiyono, 2012: 102), the instrument used in this study is a written test where multiple choice is 30 items. While non-tests in the form of observation and documentation are carried out to collect data or information about the implementation of activities and information about the state of the school. A test is a tool used to find out or measure something with predetermined rules. The test used is a written test, namely multiple choice with a total of 30 questions. Each question is made up of four alternative answers, namely A, B, C, D and E which are carried out twice, namely pre-test and post-test.

Non-test techniques in this study were observation and documentation. This observation was carried out to collect data, information needed and determine the right time to carry out research. Researchers also held direct questions and answers between teachers and students. Documentation is used in order to collect documents that can be used as a reference in order to complete the data needed, namely in the form of relevant information materials such as, the state of the school, especially students and teachers, organisational structure, vision and mission, school history, and so on. An important activity in the whole research process is data processing. With data processing, researchers can find out about the meaning of the data collected so that the results of the research will be known immediately. The data analysis techniques used in this research are descriptive statistical analysis techniques and inferential statistical analysis techniques that aim to examine research variables.

3. Result and Discussion

a. Result

Based on the results of research conducted at SMA Negeri 3 Gowa on class XI MIA 3 students, the author collects data from the student *posttest* instrument by applying the edmodo application. The following is a statistical presentation of student learning outcomes before and after treatment. Based on the data that has been obtained by researchers, it is quite clear that the difference in student learning outcomes before applying learning with the help of the edmodo application from the *pretest* and *posttest* learning outcomes in the XI MIA 3 experimental group obtained the average pretest score is 39.23 with a maximum score of 77. While the average value of the experimental class *post-test* results is 81.10 with a maximum value of 93 after applying *online* learning media with the help of edmodo. The ability of biology learning outcomes of experimental class students before the application of online learning media assisted by the edmodo application used by teachers in class XI MIA 3 by paying attention to 30 students as a sample can be seen that in the *Pre-test* there was 1 person (3%) in the sufficient category while in the *Post-test* it increased, namely 18 people 60 (%) were in the sufficient category.

Criteria for the completeness of student learning outcomes (KKM) in the *Pre-test of* class XI MIA 3. One learner 3 in the complete category. Whereas in the *post-test* there was an increase where 22 students 73 in the complete category. As for some who are not complete because they are less active in the learning process so that when giving the test the scores obtained do not reach the KKM value.

Normality Test

In the normality test using *Kolmogorov- smirnov*which is calculated with the help of SPSS *for windows release* 24.0 data for the XI MIA 3 experimental class using edmodo *online* learning media can be seen

from the *pre-test* value which is *sig* 0.200 and the post-test value *sig* 0.076.

Homogeneity Test

In the hypothesis test with a sig value (2 tailed) in the SPSS version 24.0 statistical programme shows that the pre-test and post-test values are sig 0.000. Greater than 0.05 so it can be concluded that the data variance is homogeneous.

Hypothesis Test

In the hypothesis test with the sig value (*Kolmogorov-smirnov*) in the SPSS version 24.0 statistical program shows that the *pre-test* and *post-test* values are sig 0.003 less than the significant level of 0.05, so it can be concluded that the pretest and posttest data values are normally distributed. Thus, the requirements or assumptions of normality in using the paired sample t test have been fulfilled, namely that there is an effect of *online* learning media using edmodo on the learning outcomes of students in class XI MIA 3 SMA Negeri 3 Gowa.

b. Discussion

The results showed that in the class (XI MIA 3) students who were taught using Edmodo *online* learning media for 3 (three) meetings obtained biology learning outcomes data through data processing with descriptive statistical analysis testing, the highest score was 93, the lowest score was 63 on the *post-test* score. Based on the data from the results of the research that has been done, it can be seen that there is a difference in the value of the average. Where in the *pre-test* value of 39.23 and in the *post-test* 81.10 there was an increase in student learning outcomes after the use of *online* learning media through edmodo. The research results obtained in this study are in line with research conducted by Annisa Rohmatillah, Bety Nur Achadiyah who examined 'The Effect of Edmodo-Based Learning Media on Student Learning Outcomes of Class X SMK Negeri 1 Bnglangu'. This

researcher contains the average learning outcomes of students who are taught using the edmodo application significantly higher, namely 85.29. The biology learning outcomes of experimental class students before the application of *online* learning media assisted by the edmodo application used by teachers in class XI MIA 3 with respect to 30 students as a sample can be seen that in the *Pre-test* there was 1 person in the sufficient category while in the *Post-test* an increase of 18 people was in the sufficient category.

Based on the value of completeness or KKM there are 8 students who fall into the category of incomplete after applying edmodo *online* learning media, this is because they are less active in the learning process so that the value obtained by these students is less. The completeness of student learning outcomes by applying edmodo *online* media on the material of the digestive system in humans is 73% in the complete category. Furthermore, Edmodo has an effect on learning completeness in the excellent category of 80.95% (Afdhila, 2017). The results of the N-gain score calculation can be seen that the average value is <75% or the category is quite effective. With a minimum N-gain score of 42% and a maximum N-gain score of 89%.

In the inferential statistical analysis using the t-test analysis (2- tailed), it can be seen that the hypothesis can be accepted because the application of online learning media or edmodo has an influence on student learning outcomes on the material of the digestive system in humans class XI MIA 3 SMA Negeri 3 Gowa. It can be concluded that the application of edmodo *online* learning media is successful because the mean or average value has reached the good category. The results obtained in this study also support similar research conducted by Suriadhi et al (2014) which states that there are significant differences in student learning outcomes between before and after using *online* learning through edmodo. In this study, it is proven that the use of *online* media through edmodo shows very good

qualifications, so the use of *online* media through edmodo is effective for improving student learning outcomes.

The delivery of material using *online* learning media in the form of edmodo students look more eager to learn when in the process of providing material because they feel new things that are not like face-to-face learning. Students follow the directions that have been conveyed by the teacher through learning media. This affects the learning outcomes they get after the learning process takes place. This *online* learning model provides flexibility for students to absorb teaching materials at a time that is considered most appropriate by students (Darmawan, 2014).

The utilisation of Edmodo-based media has been responded enthusiastically by students so as to improve students' skills. Students are motivated to take part in learning as evidenced by student learning outcomes. The implication of the results of this study is what Hamalik (in Arsyad, 2011: 15) argues that the use of learning media in the teaching and learning process can increase new desires and interests, motivate and stimulate learning activities.

Learning media for today is not small, especially in the world of Information and Communication Technology (ICT) which is often referred to as *online* , which has the effect of transforming conventional education into digital form, both content and system. One form of *online-based* learning media is edmodo. in this edmodo, learning can take place between teachers and students, even parents can control their children when learning takes place (Sudibjo, 2013: 188). Related to the use of edmodo as an *online* learning media, both students and teachers have almost the same expectations, namely wanting the learning process with edmodo to run well and schools can support it by providing better *wifi* facilities and also providing special laboratories so that it can facilitate the *online* learning process.

4. Conclusion

Based on the results of research and discussion in this study, it can be concluded that there is an effect of Edmodo *online* learning media on the learning outcomes of students in class XI Mia 3 SMA Negeri 3 Gowa on the material of the digestive system in humans. Edmodo online learning media is very influential on student learning outcomes when viewed from the results of the data with an average *post-test* score of 81.10 higher than the average *pre-test* score of 39.23.

DISCLAIMER

The researcher would like to thank the Education Fund Management Institutions (LPDP and BPPT) under the Ministry of Finance of the Republic of Indonesia and the Indonesian Education Scholarship (BPI) 2023 for sponsoring my doctoral study, as well as their support for this paper and publication.

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ENHANCING ENGLISH TEACHING: A NEEDS ANALYSIS FOR NUTRITION STUDY PROGRAM AT UNIVERSITAS NEGERI MAKASSAR

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Abstract

This study conducts a needs analysis to identify the English language skills, needs, and learning goals of first-semester students in the Gizi (Nutrition) program at Universitas Negeri Makassar. Recognizing the increasing importance of English proficiency in the globalized field of nutrition, this research aims to provide insights that will enhance English language instruction tailored to the specific requirements of these students. A questionnaire survey was employed as the primary methodology, allowing for the collection of quantitative data regarding students' current English skills, perceived needs, and learning goals. The survey was distributed to all 170 first-semester students across six classes via Google Forms. The collected data were analyzed to identify students' needs, challenges, and gaps in English language skills, which will inform the development of lesson plans and effective teaching strategies tailored to the students' needs. The findings reveal significant challenges in understanding spoken English and a lack of confidence in speaking abilities, alongside a strong preference for interactive and practical learning methods, such as group discussions and multimedia resources. Based on these findings, the study recommends the development of a curriculum that emphasizes practical activities, technology integration, and continuous feedback mechanisms. By addressing the identified needs, this research aims to improve the effectiveness of English language teaching in the Gizi

program, ultimately equipping students with the necessary skills to succeed in their academic and professional pursuits in the field of nutrition.

Keyword: Needs Analysis, ESP, Curriculum Development

A. Introduction

In the contemporary context of a globalized society, English proficiency has become increasingly essential, particularly in specialized fields such as nutrition. Understanding their specific language requirements and challenges is crucial for enhancing effective instructional strategies. Research indicates that English is not only a medium of instruction but also a vital tool for professional communication in the field of nutrition, where practitioners must engage with international literature, collaborate with global partners, and present findings to diverse audiences (Huang, 2018; Kachru, 1992). Therefore, it is imperative to tailor English language instruction to meet the unique needs of nutrition students, ensuring they are equipped with the necessary skills to succeed in their academic and professional endeavors.

Previous studies have highlighted the importance of conducting needs analyses in educational settings to inform curriculum design and teaching methodologies (Hutchinson & Waters, 1987; Long, 2005). By identifying the specific language skills that students struggle with, educators can develop targeted interventions that enhance learning

outcomes. For instance, a study by Basturkmen (2010) emphasizes that understanding students' needs leads to more relevant and engaging learning experiences, ultimately improving their confidence and competence in using English.

This analysis will provide insights into the current English proficiency levels of students, their perceived needs, and their learning goals. By conducting this needs analysis, I aim to assist lecturers in enhancing their lesson plans and teaching methods, ultimately maximizing learning effectiveness and ensuring successful learning outcomes for their students. The findings will inform recommendations for syllabus design that emphasize practical activities, technology integration, and peer feedback, creating a more effective and engaging English language learning experience that aligns with students' needs.

B. Literature Review

The role of English in professional fields, particularly in nutrition, has gained significant attention in recent years. English is increasingly recognized as the lingua franca in various professional domains, enabling practitioners to access a broader range of research, engage in international collaborations, and effectively communicate with diverse populations. Huang (2018) emphasizes that proficiency in English is essential for nutrition professionals, as it allows them to stay updated with global advancements in their field and participate in international discourse. This underscores the necessity for nutrition

students to develop strong English language skills to succeed in their academic and professional endeavors.

Conducting a needs analysis is a critical step in curriculum development, particularly in language education. Hutchinson and Waters (1987) argue that understanding learners' needs is essential for designing effective language programs. A needs analysis helps educators identify the specific language skills that students require, ensuring that the curriculum is relevant and tailored to the contexts in which students will use the language. This approach not only enhances the learning experience but also increases student engagement and motivation, as learners see the direct applicability of their studies to their future careers.

Research supports the notion that tailored instruction based on needs analysis leads to improved learning outcomes. Long (2005) highlights that focusing on the specific language skills that students require allows educators to create more engaging and effective learning environments. By addressing the unique challenges faced by students, such as difficulties in understanding spoken English or lack of confidence in speaking, educators can implement targeted interventions that foster language acquisition and proficiency. This is particularly relevant for students in specialized fields like nutrition, where effective communication is crucial.

Engaging students through interactive and practical learning methods is vital for language acquisition. Studies indicate that students prefer

collaborative learning experiences, such as group discussions and multimedia resources, over traditional lecture-based approaches (Basturkmen, 2010). This preference aligns with the findings of the current study, which indicates that students in the Gizi program favor interactive learning methods. By incorporating these preferences into the curriculum, educators can create a more supportive and effective learning environment that enhances student engagement and motivation.

Moreover, many students face challenges in their English language learning journey, particularly in understanding spoken English and developing speaking skills. Basturkmen (2010) notes that these challenges can hinder students' confidence and competence in using English. Addressing these issues through targeted interventions, such as increased listening practice and speaking activities, is essential for building students' confidence and proficiency. By focusing on these areas, educators can help students overcome barriers to effective communication, ultimately preparing them for success in their future careers in nutrition.

In summary, the literature highlights the critical importance of English proficiency in the field of nutrition and the necessity of conducting needs analyses to inform curriculum design. By understanding the specific language needs of students and implementing tailored instructional strategies, educators can enhance the learning

experience and better prepare students for the demands of their professional lives.

C. Methodology

This study employs a questionnaire survey as the primary methodology for conducting a needs analysis of first-semester students in the Gizi (Nutrition) program at Universitas Negeri Makassar. The questionnaire survey is an effective tool for collecting quantitative data, allowing researchers to gather information on students' current English language skills, perceived needs, and learning goals (Dörnyei, 2003). This approach is particularly suitable for educational research, as it enables the identification of specific areas where students may require additional support and resources (Cohen, Manion, & Morrison, 2011).

The survey was designed to include a range of questions that assess various aspects of English language proficiency, including listening, speaking, reading, and writing skills. It was distributed to all 170 first-semester students across six classes via Google Forms, ensuring a broad representation of the student population. The use of Google Forms facilitated easy access and efficient data collection, allowing students to complete the survey at their convenience (Bryman, 2016). Once the data were collected, they were analyzed using statistical methods to identify students' needs, challenges, and gaps in English language skills. This analysis aimed to inform the development of

lesson plans and effective teaching strategies tailored to the specific needs of the students. By focusing on the identified gaps, educators can enhance the relevance and effectiveness of English language instruction in the Gizi program, ultimately improving student outcomes (Hutchinson & Waters, 1987).

The findings from this needs analysis will provide valuable insights into the specific language requirements of nutrition students, enabling the design of a curriculum that aligns with their academic and professional goals. This approach not only addresses the immediate needs of the students but also contributes to the broader field of English for Specific Purposes (ESP), which emphasizes the importance of tailoring language instruction to meet the specific needs of learners in specialized fields (Basturkmen, 2010).

D. Findings and Discussion

1. Background Information

The survey shows that most students in the Program Studi Gizi at Universitas Negeri Makassar are still at the beginner level of English (72.4%) and intermediate level (22.9%), with only a small group (4.7%) at the advanced level. Most students rarely use English outside class (72.4%), and only 2.4% use it daily. When it comes to confidence, while 62.4% feel somewhat confident using English in discussions or presentations, a significant number (33.5%) are not

confident at all, which may reflect their low proficiency and limited use of the language.

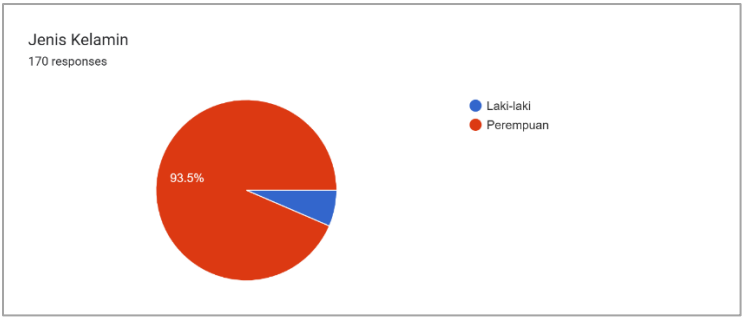

Figure 1 Gender

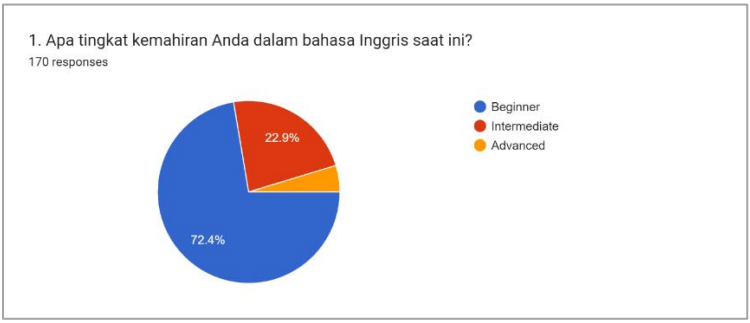

Figure 2 Current Level of English Proficiency

Figure 3 Frequency of Using English Outside the Classroom

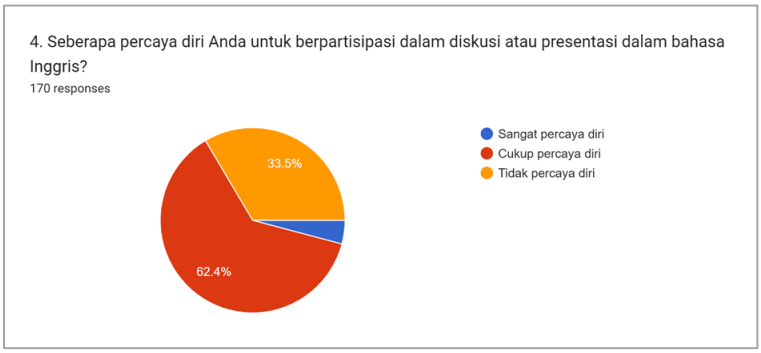

Figure 4 Confidence in Participating in Discussions or Presentations in English

2. Learning Needs

The survey results show that 69.4% of students believe their speaking skills need significant improvement, making it the top priority. In

comparison, only 24.1% feel that their writing skills require enhancement. About 30.6% identified listening skills as needing improvement, while 38.2% highlighted a need to enhance their reading comprehension. Additionally, 61.2% of students see grammar and vocabulary as areas needing improvement, indicating a strong focus on foundational language skills.

The survey clearly shows that improving speaking skills is the top priority for students. This suggests that many students struggle with verbal communication in English, which is critical for real-life interactions, presentations, and discussions. The high percentage indicates that students may feel less confident or lack opportunities to practice speaking, emphasizing the need for more speaking-focused activities or courses. Furthermore, Kayi (2006) emphasizes that speaking activities should be integrated into language learning curricula to enhance fluency and confidence. Engaging students in interactive speaking tasks can significantly improve their verbal communication skills, making them more prepared for real-life interactions. Improving grammar and vocabulary is also highlighting it as an important area, suggesting that a stronger foundation in these areas could further support the development of their speaking and writing skills.

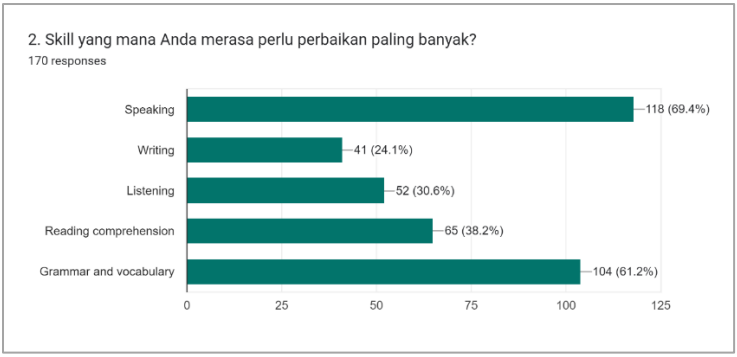

Figure 5 The Skill need to Improve

3. Course Expectations

The survey revealed that around 70% of students want to improve their speaking skills, particularly for presentations and discussions. Additionally, they also want to improve their reading comprehension skills. These shows their course expectations for learning English. Furthermore, about 60% of students are also interested in improving their academic writing skills. Only a small percentage indicated that their motivation for learning English was to prepare for exams like the TOEFL.

The focus on speaking and reading skills suggests that students are prioritizing practical communication and comprehension abilities for academic and professional purposes. The strong interest in academic writing reflects their need for better written communication, likely for assignments or reports. The lower interest in exam preparation, like

TOEFL, indicates that most students are more concerned with immediate language use in academic settings than with standardized testing. Research consistently highlights those speaking skills are essential for effective communication in both academic and professional settings. According to Brown (2007), speaking is a critical component of language proficiency, and students often face challenges due to limited opportunities for practice. This lack of practice can lead to decreased confidence, as noted by Goh (2007), who found that students often feel anxious when required to speak in a second language.

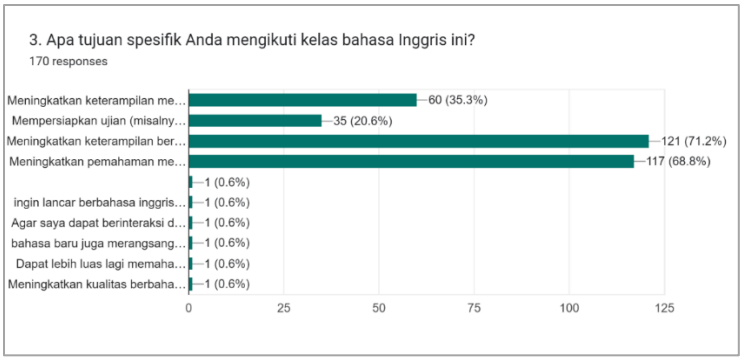

Figure 6 Specific Course Expectation

4. Challenges Faced

The most challenges faced by almost half of the students were still difficult in understanding spoken English, lack of confidence and vocabularies and still struggle with grammar. To address these

challenges, incorporating more listening practice through real-life audio or video materials can help improve comprehension. Speaking activities in a supportive environment can build confidence. Additionally, vocabulary-building exercises and targeted grammar lessons should be integrated into the course to strengthen their foundational skills. Furthermore, Kayi (2006) emphasizes that speaking activities should be integrated into language learning curricula to enhance fluency and confidence. Engaging students in interactive speaking tasks can significantly improve their verbal communication skills, making them more prepared for real-life interactions.

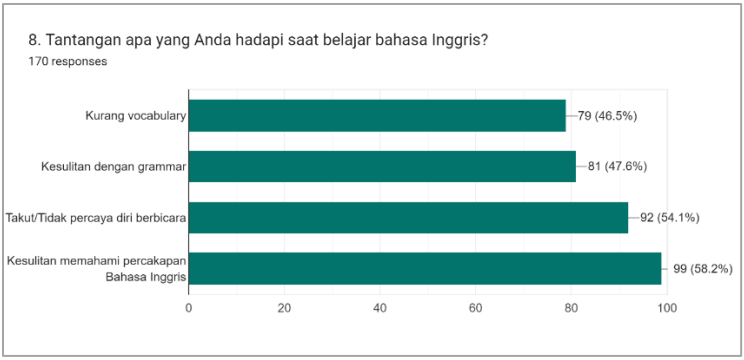

Figure 7 Challenges Faced by Students

5. Learning Preferences

The most engaging activities for students were group activities and discussions, as well as the use of online resources like videos and articles. In contrast, only a few students showed interest in textbooks and individual assignments. Over 80% of students preferred learning materials related to everyday language use, such as conversations and idioms, while literature and academic articles like journals are less favored. Multimedia content also garnered considerable interest. As for preferred teaching methods, students favor direct instruction and enjoy interactive classroom discussions. However, project-based learning and self-directed learning are less suitable for them. Students also emphasized the importance of integrating technology into English language learning, and they found that online learning is quite effective for them.

It can be interpreted that the students prefer practical and interactive learning methods, such as group discussions and everyday language topics, rather than traditional approaches like textbooks or academic articles. They enjoy direct instruction and multimedia content but find project-based and self-directed learning less suitable. Additionally, they see the integration of technology as important and find online learning effective. Additionally, a survey conducted by Karthigeyan and Nirmala (2013) found that students are more inclined towards learning styles that involve active participation and practical application rather than traditional methods like textbooks. The study highlights that student favor direct instruction and interactive

discussions, indicating a clear preference for dynamic learning environments that facilitate effective communication skills.

To meet these preferences, courses should focus on interactive activities like group discussions and incorporate everyday conversational topics. Using multimedia resources (videos, articles) and technology integration in lessons will enhance engagement. Lecturer should also prioritize direct teaching methods while minimizing less favored approaches like project-based learning. According to a study by Rafiq et al. (2023), students demonstrate a strong preference for interactive and engaging learning methods, such as group discussions and multimedia content, which align with their everyday language use and practical applications. This research emphasizes the importance of incorporating technology and varied resources to enhance student engagement in English language learning.

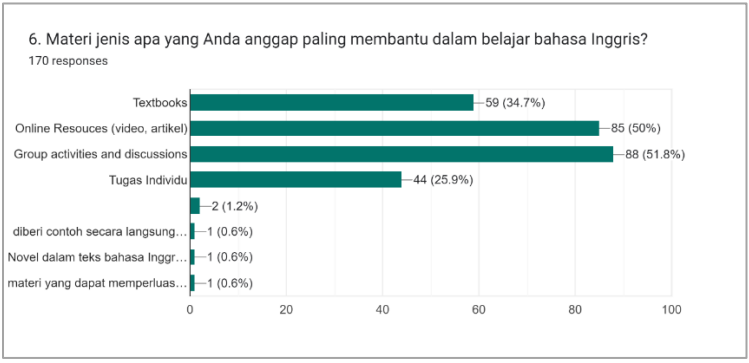

Figure 8 The Effective Learning Material or Activity

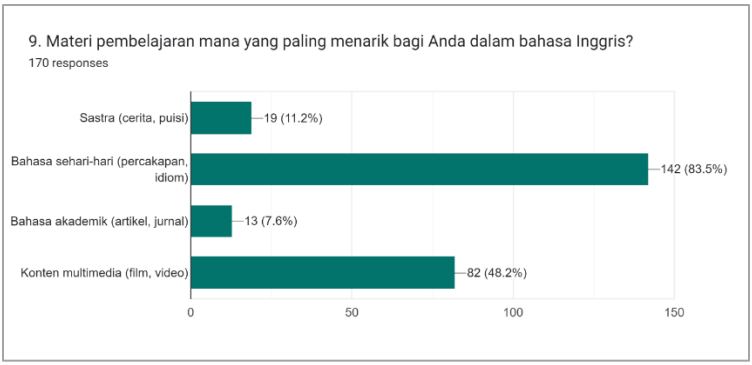

Figure 9 Interested Material for Learning English

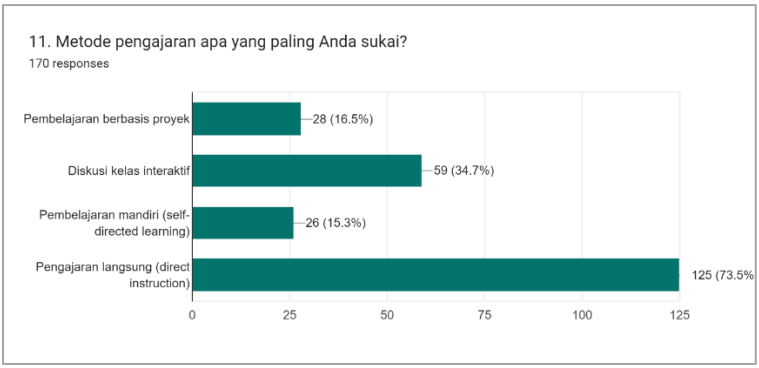

Figure 10 The Preference Teaching Method

Figure 11 The Importance of Using ITC in Teaching

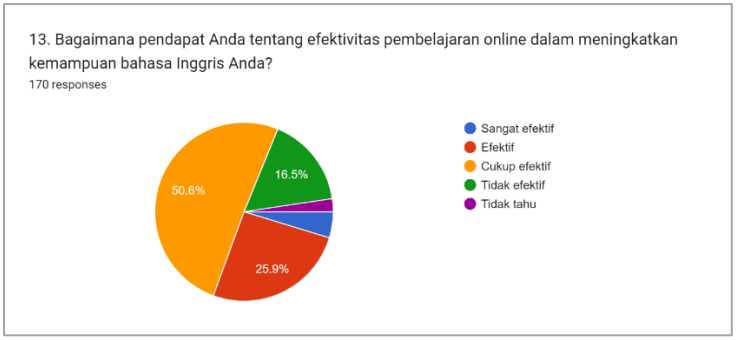

Figure 12 The Effectiveness of Online Learning

6. Feedback Preferences

The survey found that students prefer receiving feedback in the form of written comments and during group feedback sessions. Peer review feedback is also seen as a potential alternative for them. The students favor detailed, structured feedback that they can review at their own pace, such as written comments. They also appreciate the

collaborative aspect of group feedback, which allows them to learn from others' experiences. The interest in peer feedback suggests a willingness to engage with their classmates' learning process. Peer review activities not only enhance students' writing skills but also promote collaborative learning, allowing students to engage critically with each other's work. This method has been shown to improve students' motivation and confidence in their writing abilities, as they learn to evaluate and provide constructive feedback to their peers (Feng, 2023).

To cater to these preferences, lecturer should provide comprehensive written feedback and regularly incorporate group feedback sessions to foster a collaborative environment. Peer review activities could also be introduced as an alternative method, encouraging students to critically engage with each other's work.

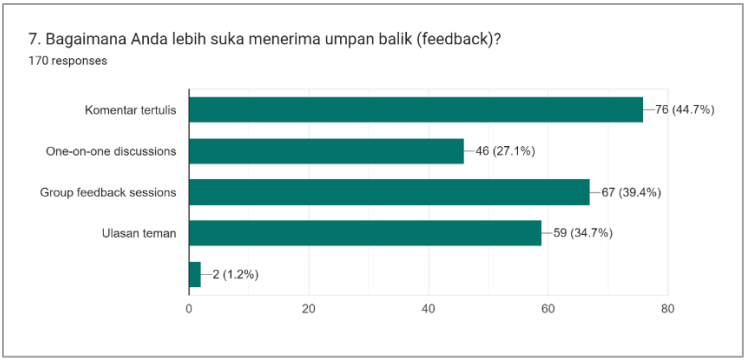

Figure 13 Feedback Preference

7. Assessment Preferences

The survey results indicate that the majority of students prefer assessments that involve listening activities, such as repeating conversations or listening to audio. A smaller portion prefers group discussions, video presentation recordings, and writing tasks. Very few students enjoy oral presentations, with less than 1% favoring individual assignments.

The strong preference for listening activities suggests that students are more comfortable with assessments that align with their interests in practical language use. The low interest in oral presentations and individual tasks indicates a lack of confidence in speaking and perhaps a preference for collaborative learning experiences. Research by Goh and Burns (2012) indicates that students often show a greater affinity for listening activities that reflect real-life language use, as these tasks can enhance their engagement and comprehension. Conversely, the reluctance towards oral presentations and individual assessments may stem from a lack of confidence in speaking abilities, highlighting the importance of fostering collaborative learning environments that encourage peer interaction and support.

To address these preferences, lecturer should incorporate more listening-based assessments into the curriculum, allowing students to practice their skills in a supportive environment. Group discussions and collaborative projects can also be emphasized to provide students with opportunities to engage without the pressure of individual

presentations. This approach will help build their confidence and reinforce their learning preferences.

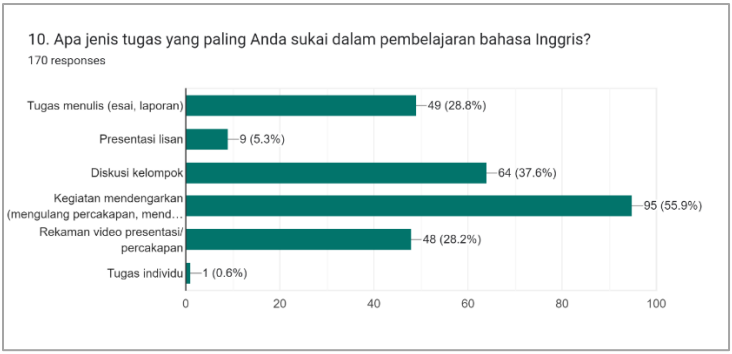

Figure 14 Students' Assessment Preferences

E. Recommendations for Syllabus Design

Based on the findings from the survey regarding learning needs, preferences, and feedback, here are recommendations for designing a syllabus that meets the needs of the students in the Program Studi Gizi at Universitas Negeri Makassar:

1. *Focus on Speaking and Listening Skills*
    - Include Practical Activities: Integrate group activities and discussions centered on everyday language use to enhance speaking skills.
    - Listening Exercises: Incorporate diverse listening tasks, such as repeating conversations and listening to audio clips, to improve comprehension.

2. *Utilize Interactive and Multimedia Resources*
    - Online Resources: Integrate videos, articles, and multimedia content into lessons to engage students and make learning more dynamic.
    - Technology Integration: Leverage online platforms for assessments and discussions to meet students' preferences for using technology in learning.
3. *Balanced Assessment Methods*
    - Listening Assessments: Design assessments primarily focused on listening activities, with opportunities for students to engage in group discussions.
    - Collaborative Projects: Include group presentations or video recordings instead of individual oral presentations, fostering collaboration and reducing anxiety.
4. *Encourage Feedback*
    - Group Feedback Sessions: Implement regular group feedback sessions where students can give and receive feedback collectively, promoting a supportive learning environment.
    - Peer Review Opportunities: Introduce peer review assignments that allow students to critique each other's work, enhancing their engagement and learning from one another.

5. *Direct Instruction with Interactive Components*
    - Direct Teaching Methods: Maintain a focus on direct instruction while incorporating interactive elements to encourage participation and discussion.
    - Practice-Based Learning: Emphasize practical tasks and simulations that allow students to apply their skills in real-life scenarios, particularly in speaking and listening.
6. *Flexibility and Adaptability*
    - Adapt Materials to Interests: Use materials to include everyday conversations, idioms, and relevant topics that resonate with students, while minimizing literature and academic articles that are less favored.
    - Regular Feedback: Continuously gather feedback from students on the syllabus and make adjustments to ensure it remains relevant and engaging.

F. Conclusion

This study analyzes the students' needs in learning and teaching English at the Program Studi Gizi of Universitas Negeri Makassar. Findings indicate that many students struggle with understanding spoken English and lack confidence in their speaking skills, with a strong desire to improve in these areas, particularly for presentations and discussions. Students favor interactive learning methods, such as

group activities and multimedia resources, over traditional textbooks and individual assignments. They prefer direct instruction and group feedback sessions, and their assessment preferences lean towards listening tasks rather than oral presentations. Furthermore, this study gives recommendations for syllabus design in emphasizing practical activities, technology integration, and peer feedback, aiming to create a more effective and engaging English language learning experience that aligns with students' needs.

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IMPLEMENTATION OF MODERATE EDUCATION ON TEACHERS' UNDERSTANDING OF LEARNING AT MADRASAH ALIYAH NEGERI 2 MAKASSAR

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ABSTRACT

The radical threat is currently widespread in Indonesian society, carried out by radical, fundamentalist, and extremist groups, among others. Radicalism, in addition to producing unrest, can lead to widespread conflict among other students, as well as a series of terrorist attacks, such as bomb blasts. The purpose of this article on this research is to explain how teachers implement moderate education in learning in Madarasah. The method used in this research is qualitative research. Where researchers convey information by describing it in sentence form. The result of this article shows that; In carrying out the learning process, it is hoped that it involves all elements in the education unit, especially at Madrasah Aliyah Negeri 2 Makassar so that togetherness and cooperation between Madrasah Heads, Education Personnel, and Teachers, as well as students, coordinate with each other, in carrying out the learning. Apart from that, it must be prepared one month in advance. Our relationships with fellow human beings must be maintained intact and strictly adhere to the foundations of Islam which have been implanted by the bearers of Islam in the land of Indonesia. The moderate attitude upheld by our predecessors must continue to exist in its path, by maintaining the image of Islam in the face of the world and protecting Islam from extreme groups such as people with

liberal, pluralistic, secular views and the emergence of radicals who have a short understanding of Islam. This is all our way to maintain the eternity of Islamic law and practice the concept of moderation (wasahtiyah) in Islam to create a sense of compassion for others and a sense of mutual respect and appreciation for the differences and diversity that exist among Muslims, especially in Indonesia.
Keywords; education, learning, moderation

ABSTRAK

Ancaman radikal yang saat ini marak terjadi di masyarakat Indonesia antara lain dilakukan oleh kelompok radikal, fundamentalis, dan ekstremis. Radikalisme, selain menimbulkan keresahan, juga dapat menimbulkan konflik yang meluas antar sesama mahasiswa, serta serangkaian serangan teroris, seperti ledakan bom. Tujuan dari penulisan artikel penelitian ini adalah untuk menjelaskan bagaimana guru menerapkan pendidikan moderat dalam pembelajaran di Madarasah. Metode yang digunakan dalam penelitian ini adalah penelitian kualitatif. Dimana peneliti menyampaikan informasi dengan cara mendeskripsikannya dalam bentuk kalimat. Hasil artikel ini menunjukkan bahwa; Dalam melaksanakan proses pembelajaran diharapkan melibatkan seluruh unsur pada satuan pendidikan khususnya di Madrasah Aliyah Negeri 2 Makassar sehingga kebersamaan dan kerjasama antara Kepala Madrasah, Tenaga Kependidikan, dan Guru, serta siswa saling berkoordinasi. lainnya, dalam melaksanakan pembelajaran. Selain itu, harus dipersiapkan satu bulan sebelumnya. Hubungan kita dengan sesama umat manusia harus tetap terjaga utuh dan berpegang teguh pada landasan Islam yang telah ditanamkan oleh para pembawa Islam di tanah Indonesia. Sikap moderat yang dijunjung oleh para pendahulu kita harus tetap ada dalam perjalanannya, dengan menjaga citra Islam di hadapan dunia dan melindungi Islam dari kelompok-kelompok ekstrim seperti

masyarakat yang berpandangan liberal, pluralistik, sekuler dan munculnya kelompok-kelompok radikal yang memiliki pandangan yang berbeda-beda. pemahaman singkat tentang Islam. Ini semua adalah cara kita untuk menjaga kekekalan syariat Islam dan mengamalkan konsep moderasi (wasahtiyah) dalam Islam agar tercipta rasa kasih sayang terhadap sesama serta rasa saling menghormati dan menghargai perbedaan dan keberagaman yang ada di kalangan umat Islam khususnya di Indonesia.
Kata kunci: moderasi, pembelajaran, Pendidikan

INTRODUCTION

Moderation (wasathiyyah) has recently been emphasized as the mainstream of Islam in Indonesia. This mainstreaming idea is not only a solution to various religious and global civilization problems, but it is also the right time for the moderate generation to take more aggressive steps. If radicals, extremists, and purists speak loudly with violent actions, then moderate Muslims must speak louder with peaceful actions Religious Moderation has recently become the main focus of the Ministry of Religious Affairs, even becoming one of the three mantras that have become the spirit of the current Ministry of Religious Affairs. This is because religious moderation has a high level of relevance and urgency during religious life in Indonesia. Religious moderation is considered capable of answering various religious problems and global civilization and is the right time for moderate generations to take more aggressive steps.

Moderation arises because of plurality so religious moderation is considered the right perspective in plural religious life. So if there are radical, extremist, or puritanical groups that speak loudly with violent actions, then moderate groups must speak louder with peaceful actions.

The concept of moderation (wasathiyyah) is considered capable of counteracting people from slipping into radical and extreme understanding. Historically, groups that practice radical and extreme understanding are mostly accompanied by acts of violence in the name of jihad. Planting an understanding of the concept of moderation is very necessary from an early age to the younger generation. This is so that the younger generation has an inclusive religious attitude. So that if we are in a multicultural and multireligious society, we can appreciate and respect the differences that exist and can place ourselves wisely in social interactions during society, (Hanafi Pelu & Muh. Zainal Hasyim, 2021).

The vision of Islamic moderation that needs to be instilled in Indonesia's young generation includes (a) tasamuh (tolerance), which recognizes and respects differences, both in religious and social aspects, (b) tawassuth (taking the middle way), which is not excessive and does not reduce religious teachings, (c) tawazun (balance), which is a balanced understanding and practice of religion, (d) i'tidal (straight and firm), which is putting things in their place, (e) applying a tolerant attitude, being careful in giving verdicts of kafir and heresy, (f) creating space for inclusive (open) dialogue both with internal groups or schools within Islam and with various circles of non-Islamic religious leaders, (g) egalitarian, namely not discriminating against others due to differences in beliefs or religions and traditions, (h) deliberation, namely every problem is resolved by deliberation to reach consensus with the principle of placing benefits above all.

Based on this momentum, ICRS and the Indonesian Ministry of Religious Affairs organized the International Symposium on Religious Life (ISRL) in Yogyakarta, 6-9 November 2018. ISRL is a biennial program organized by the Indonesian Ministry of Religious Affairs. This year, the ISRL committee invited speakers and paper presenters from various countries such as Japan, Pakistan, Malaysia, Australia, Indonesia, and Indonesia, (Hanafi Pelu, 2020).

United States, Switzerland, Nigeria, Singapore and Macedonia. The International Symposium on Religious Life (ISRL 2018) was inaugurated by the Indonesian Minister of Religious Affairs, Lukman

Hakim Saifuddin. In his speech, he said that we should encourage the formation of religious knowledge transmission through the media of cultural products so that the development of religion and culture can go hand in hand. Negotiating religion with culture does not mean we give up the basic principles of each religion's beliefs in the name of culture. Islamic educational institutions, namely; Madarsah have a great responsibility in spreading Islam that is Rahmatal Lil 'Alamin, and the success of education is very important to help a person achieve his success by having a moderate attitude. (A. Rohman, 2017), Formal education institutions are very strategic pillars for transferring values of tolerance, moderation, respect, and empathy and for developing non-violent attitudes in students. This implies that intelligence without good character building will only produce a diploma, but not a noble character. More efforts are needed from educational institutions, including Madrasah Aliyah Negeri 2 Makassar, to present fun learning by teachers to students, which is expected to encourage the cultivation of moderate Islamic values so that students respect each other, respect and tolerance, (Hanafi Pelu, 2021).

Based on the explanation above, the formulation in this paper is; how do teachers implement moderate education in learning in Madarasah? The purpose of this article on this research is to explain how teachers implement moderate education in learning in Madarasah.

The study of the concept of moderation (wasathiyyah) or moderate Islam has attracted the attention of many scholars in various fields such as socio-politics, language, Islamic development, socio-religion, and Islamic education. This terminology is one of the many terms often used to refer to Muslim labels such as modernist, progressive, and reformist Islam. As El Fadl recognizes, this moderate terminology is considered the most appropriate among other terms. Although moderates are also often described as modernists, progressives, and reformists, none of these terms replace the term moderate. This is based on the legitimacy of the Qur'an and the Prophet's hadith that Muslims are commanded to be moderate. This

is where the term moderate finds its roots in the Islamic tradition, especially since the term wasathiyyah is the basic identity and character of Islam.

The term 'Moderate Islam' must be understood by Muslims. (Bakir & Othman, 2017), defines moderate Islam as the 'middle' conceptual sense of balancing acts such as a just and modest approach and a state of balancing acts that are zero from extremes and fanatics in every aspect of human life. Meanwhile, (Yaakub & Othman, 2016), underlines that the words 'Moderate Islam' (wasatiyyah) are a terminological term that represents the conceptual framework given to Muslims as stated in the Qur'an Surah al-Baqarah (2:143), as translated by the Indonesian Ministry of Religious Affairs (2013): And thus (also) We have made you (Muslims) ummatan washatan (a just and chosen people) that you may bear witness to (the deeds of) mankind and that the Messenger of Allah (Muhammad) may bear witness to (the deeds of) you: (*Dan demikian (pula) Kami menjadikan kamu (Umat Islam) ummatan washatan (umat yang adil dan pilihan) agar kamu menjadi saksi atas (perbuatan manusia) dan agar Rasulullah (Muhammad) menjadi saksi atas (perbuatan) kamu*), (Hanafi Pelu, Murni Mahmud, Syahril Nur & Kisman Salija, 2022).

Surah al-Baqarah Verse 143 shows that there is a term ummatan wasathan. The word wasath means middle, middle, moderate, middle way, balanced between two poles or two extremes (right and left). Al-Munawwir states that the word wasathan means the middle, while Sya'bi in the al-Qalam dictionary interprets wasathan as the middle path (N. Cholid, 2017). This definition indicates that ummatan washatan is a people who behave, think, and behave in moderation, fairness, and proportion between material and spiritual interests, divinity and humanity, past and future, reason and revelation, individuals and groups, realism and idealism, and worldly and ukhrawi orientations, (Muh. Zainal & Hanafi Pelu, 2022).

Islamic education so far generally seems to be only concerned with the vertical relationship with the creator Allah SWT in the form of worship alone, instead less concerned with horizontal relationships with fellow human beings, or without parallel with obligations to fellow

human beings and the environment, in the sense of caring for the social environment and the environment has been neglected. The relationship between humans and fellow humans does not run intimately, does not establish friendships intimately, even makes enemies, no empathy and sympathy for fellow humans. As for moderate Islamic education, it prioritizes the values of Islam as a religion that is Rahmatan Lil 'Alamin. Islam brings mercy, can soothe, calm, love, and tenderness to all human beings. It has a culture of cooperation, helping, mutual respect, and mutual respect, (Hanafi Pelu & Nurwafia Nur, 2022). The attitude of tawasuth which is based on the principle of life that upholds the necessity of being fair and straight during life together, including at Madrasah Aliyah Negeri 2 Makassar, acting straight and always being constructive and avoiding all forms of approaches that are tatharruf (extreme), (Nurcholis, 2011). The application of tawasuth (with its various dimensions) does not mean that it is permissible (compromising) by mixing all elements (syncretism), nor does it isolate itself and reject meetings with other elements. This is in line with (Umar, Nasaruddin, 2019), that the principle and character of tawasuth that has become the character of Islam must be applied in all fields, including educational institutions so that Islam and the attitudes and behavior of Muslims are always a witness and measure of truth for all human attitudes and behavior in general, (Hanafi Pelu & Murni Mahmud, 2021).

Regarding the implementation of moderate Islamic values in Madrasah Aliyah Negeri 2 Makassar, the manifestation of moderate principles and characters must be maintained, maintained, and developed as well as possible. This confirms what is explained by (N. Cholid, 2017), that some of the principles and characters of moderation (tawasuth) in Islamic teachings include 1) moderation in the field of aqidah, 2) moderation in sharia, 3) moderation in the field of tasawwuf and morals, 4) moderation in the field of association (mu'asyarah), 5) moderation in the field of state life, and 6) moderation in the field of culture. Prinsip dan karakter Islam moderat perlu ditanamkan sejak dini kepada peserta didik di tingkat Madrasah Aliyah Negeri 2 Makassar agar menjadi generasi masa depan yang

berkarakter Islam rahmatan lil ‘amin. Hal ini menyetujui apa yang ditegaskan oleh (Wani, Abdullah, & Chang, 2015), bahwa keragaman adalah kecenderungan alami yang harus diterima oleh semua manusia. Orang dengan perilaku yang saling bertentangan adalah mereka yang tidak memiliki sikap moderasi, toleransi, akomodasi, dan kerja sama. Selanjutnya, melalui dialog peradaban, orang-orang dari berbagai filosofi dan ideologi dapat meminimalkan dan mengurangi perbedaan mereka, (Hanafi Pelu & Murni Mahmud, Syahril Nur&Kisman Salija, 2022).

METHOD

The research method is a way to obtain results and knowledge. According to (Creswell John, 2016), A research method is a process of steps used to collect and analyze data to improve understanding of a topic or problem. The method used in this research is qualitative research. Where researchers convey information by describing it in sentence form. Meanwhile, according to Bogdan and Taylor (Sutrisno Hadi, 2015), Qualitative research is a phase or research process that produces descriptive information, namely the people and behavior observed, in written or spoken language. The type of research used in research is descriptive research. Whereas, the type of descriptive research only describes phenomena, symptoms, events, and events that occur in certain groups of people. Meanwhile, according to (Moleong J. Leksi, 2013), This type of descriptive research aims to explain the occurrence, and characteristics of a group, event, event in a particular group, at a period to find out the phenomena that occur in the community, (Hanafi Pelu & Muh. Zainal, 2022).

FINDINGS AND DISCUSSION

Moderate education always teaches us to take very rational actions. Rational is translated from the word rational, which means

rational, reasonable, or reasonable, (Merriam-Webster, Incorporated, 2024). Thus it can be understood in terms of actions or behavior carried out in accordance or by reason, a healthy mind, carried out with full consideration, how to gain and lose, positive and negative impacts, not rash or reckless. A rationalist always bases or stands on the rational, very careful in doing, so that the results will bring good luck to himself and others.

A rationalist will always act intelligently, think carefully and precisely, act calculatingly, have high curiosity, communicate effectively and empathetically, get along politely, uphold truth and virtue, and love God and the environment, (Muchlas Samani dan M.S. Hariyanto, 2013). Every child has a cognitive structure called schemata, namely: a system of concepts that exist in the mind as a result of understanding objects that exist in their environment. The understanding of the object takes place through the process of assimilation (the process of connecting objects with concepts that already exist in the mind) and the process of accommodation (the process of utilizing concepts in the mind to interpret objects). These two processes, if they continue, will make the old knowledge and new knowledge become balanced. The idea presented by (Husamah, 2016), In this way, children can gradually construct knowledge through interaction with their environment. This demonstrates that children's learning behavior is strongly influenced by aspects of themselves and their environment. The two are inseparable because learning occurs in the context of the child's interaction with the environment.

Furthermore, (Husamah, 2016), explains that school-age children are in the concrete operational stage. In the primary school age range, children begin to show learning behaviors including 1) starting to view the world objectively, shifting from one aspect of the situation to another reflectively and viewing elements simultaneously, 2) starting

to think operationally, 3) using operational thinking to classify objects, 4) forming and using connected rules, simple scientific principles, and using cause and effect relationships, and 5) understanding the concepts of substance, liquid volume, length, width, area, and weight.

1. Madrasah

Madrasah is an Arabic word that means school. The origin of the word is darasa (read: darosa) which means learning. In Indonesia, a madrasah is specialized as a (general) school whose curriculum includes Islamic lessons. Madrasah Ibtidaiyah (MI) is equivalent to elementary school, Madrasah Tsanawiyah (MTs) is equivalent to junior high school, and Madrasah Aliyah (MA) is equivalent to senior high school.

Etymologically, the word 'Madrasah' in the Big Indonesian Dictionary is a school or college usually based on Islam. In the Encyclopaedia of Islam in Indonesia, the word Madrasah is a word derived from Arabic, from the root word 'darasa' which means 'to learn'. Madrasah means a place to learn. The word darasa with the meaning of 'reading and learning' which is the root of the word madrasah itself, comes from Hebrew or Aramaic, (Ridwan & Hanafi Pelu, 2021).

Madrasah also means School or Mazhab. The word 'Madrasah' literally means or is equivalent in meaning to the Indonesian word 'School' (which is also not an original Indonesian word). In general, the use of the word madrasah in the sense of school, has a special connotation, namely Islamic schools. Madrasah means a place or vehicle where students receive learning, with the intention that in the madrasah the child undergoes a directed, guided, controlled learning process.

If examined from a linguistic understanding, the term madrasah is an isim makan (place name), derived from the word darasa, which means a place where people learn. From this root meaning, it then developed into a term that we understand as a place of education, especially with Islamic nuances.

While epistemologically, madrasah is one type of Islamic educational institution that developed in Indonesia, which was cultivated in addition to mosques and pesantren. Furthermore, in the Indonesian context, this educational institution is a modern-day Middle Eastern madrasa institution due to the influence of Western education which is dominantly filled with religious curriculum. However, due to the influence of colonial politics, schools, and madrasahs are seen as two dichotomously different forms of educational institutions: schools are secular and madrasahs are Islamic, (Abdurrafiq & Hanafi Pelu, 2021).

Technically, in the formal teaching and learning process in Indonesia, madrasah is not only understood as a school. Rather, it is given a more specific connotation, namely 'religious school', a place where students learn the intricacies of religion and religion (Islam).

As an educational institution, the Madrasah is an institution that grows and develops by and from the community, as well as for the community which is full of Islamic cultural meanings, admittedly or not madrasah has waded a long journey of civilization in realizing the formation of the nation's personality which is full of changes, but madrasah is reluctant to break away from its original meaning by its cultural ties, namely Islamic culture.

The development of madrasah is closely related to the development of human personality potential. Abdul Rachman Shaleh explains, in 'Madrasah and Education of the Nation's Children, Vision, Mission and Action', that the development of human personality includes: 1) Development of faith, which is actualized in piety to Allah Swt. to produce purity. 2) The development of creation, to fulfill the needs of material life and intelligence, solving the problems faced. This results in truth. 3) Development of karsa, to have good attitudes and behavior (ethics, morals, and morals). This development produces goodness. 4) The development of taste, to have fine feelings (art appreciation, art perception, art creation). This produces beauty. 5) Development of work, to make humans skilled and capable of useful technology to produce usefulness. 6) The development of

conscience is actualized into a conscience that functions to provide judgment (faith, creation, karsa, taste, work) to produce wisdom.

So the development of the Madrasah can be interpreted as an effort to realize the vision and mission to make the Madrasah Islamic, populist, and quality. It is intended as a process or way of making madrassas big, blooming, and expanding, in the sense of increasing in number and increasingly perfect in educating, eliminating ignorance, eliminating ignorance and training the skills of learners (Learners) to prepare themselves to face future challenges with tough Human Resources (HR) competencies in the form of sanctity of faith, truth of creation, goodness of spirit, usefulness of work, and wisdom of conscience.

Madrasahs are required to always process to become large, bloom and develop, spread widely and multiply, and become more perfect with the basic purpose of educating, eliminating ignorance, eliminating ignorance and equipping students with the above competencies to face the challenges of an era full of changes in various sectors of life, including globalization, by not leaving the basis of Islam, namely the Qur'an, and Sunnah.

In its development, the madrasah certainly cannot miss the basics as an institution that manages humans as assets of religion and nation in facing the era of globalization. The most basic needs of madrasahs are as contained in the vision of the Madrasah, namely 'Islamic, Populist, Quality, and Diverse'.

Therefore, the format of madrassas has evolved to become increasingly clear, from madrassas that started with traditional elements, private, to the public, and from low-level (Raudlatul Athfal, Bustanul Athfal, and Madrasah Ibtidaiyah), to advanced madrassas (Madrasah Tsanawiyah as a first-level advanced and Madrasah Aliyah as an upper-level advanced).

2. Learning

Fun learning is a teaching and learning process that is not only focused on the results achieved by students but how the fun learning process can provide good understanding, intelligence, perseverance,

opportunity, and quality and can provide changes in behavior and apply it in their lives.

Pleasant learning will also train and instill a moderate attitude in students and can also create a pleasant learning atmosphere to provide the creativity of students to be able to learn with the potential they already have, namely by giving them freedom in carrying out learning in their way.

One of the definitions of learning that can be put forward is what was written by Smith, Learning refers to changes in behavior, a change which is attributable to a set of antecedent conditions categorized as experience and training rather than to processes such a maturation, growth, physiology, perception, or motivation. In addition, the changes in performance, which we define as learning are relatively speaking, permanent rather than transitory; they persist for some time If only a few minutes.

Two key words are important to note in the definition above, namely; behavior, namely changes in behaviour and performance where a learner who has gone through a learning process with certain material, will experience changes in his appearance both outwardly and psychologically. These two terms are related to the outward appearance that can be observed sensually and the possibility of psychological content inside. Both of these are the achievements of the activity called learning. The learning experience will at least lead to changes in behavior and changes in the appearance of the learning subject concerned, (Hanafi Pelu & Rosmiati, 2023). Therefore, if a learning subject does not occur in the changes referred to above, it means that the learning they do is not successful or at least considered to have stagnated. Learning is a situation that is created from the interaction that takes place between various factors (multiple factors) or components; teachers, students (learners), curriculum, methods, facilities and media, and other necessary components. While the expected goal of learning is none others revolve around the analysis of how to eliminate the gap between the current behavior and the expected behavior in the future after the learning is completed.

Several variations of learning quality can be put forward to illustrate how learning is managed in such a way.

2. Teacher

In the context of Islamic education, teachers are all those who try to improve others in an Islamic manner. These can be parents (fathers and mothers), uncles, brothers, neighbors, religious leaders, community leaders, and the wider community. Especially for parents, Islam gives important attention to them as the first and main educators for their children, as well as laying a solid foundation for their children's education in the future.

The position of teachers in Islam is very special. Many proofs show this. For example, the Hadith narrated by Abi Umamah means; 'verily Allah, the angels, and all the creatures in the heavens and the earth, down to the ants in their burrows and also the big fish, all of them salute the mu'allim who teaches goodness to people (HR. Tirmidzi).

Meanwhile, according to the Qur'an in Surah al-Baqarah verse 32 which means; 'They replied, 'Glory to You, there is no knowledge for us other than what You have taught us. Surely You are All-Knowing (again) All-Wise' The high position of teachers in Islam, according to Ahmad Tafsir, cannot be separated from the view that all knowledge originates from Allah, the Teacher is a human being, where humans are unique. Each human being has its own specifications. With this uniqueness, a unique learning situation is created.

The quality of learning will vary according to the time a teacher is in action. There is a development of a teacher's learning situation from time to time, according to the psychological conditions surrounding the teacher. So the element of time here greatly affects the learning situation. The quality of learning will vary according to the group of students who are the subject of learning. That is, a group may have certain tendencies in achieving its goals, which affects the speed and intensity with which they deal with the learning process. The quality of learning varies according to the curriculum presented. Curriculum in this sense is not only the subject matter that has been organized and

determined, but also includes methods, strategies, student management, and other aspects of the curriculum.

Looking at the various variations of learning above, it can be understood that learning as a process deals with various variations of human life both in the teacher as a facilitator and motivator of learning, as well as in students as subjects who are taught with all the variations as well. Thus, it is necessary to create a very humane learning situation.

CONCLUSION

In carrying out the learning process, it is hoped that it involves all elements in the education unit, especially at Madrasah Aliyah Negeri 2 Makassar so that togetherness and cooperation between Madrasah Heads, Education Personnel and Teachers, as well as students, coordinate with each other, in carrying out the learning. Apart from that, it must be prepared one month in advance. Our relationships with fellow human beings must be maintained intact and strictly adhere to the foundations of Islam which have been implanted by the bearers of Islam in the land of Indonesia. The moderate attitude upheld by our predecessors must continue to exist in its path, by maintaining the image of Islam in the face of the world and protecting Islam from extreme groups such as people with liberal, pluralistic, secular views and the emergence of radicals who have a short understanding of Islam. This is all our way to maintain the eternity of Islamic law and practice the concept of moderation (wasahtiyah) in Islam to create a sense of compassion for others and a sense of mutual respect and appreciation for the differences and diversity that exist among Muslims, especially in Indonesia.

ACKNOWLEDGMENT

The author would like to thank the Head of Bosowa University, Makassar, teachers, and students who were willing to be asked to provide information and ideas so that this article could be

completed. To the editor and all editors, the Committee, the journal manager, and the reviewer team for their willingness to examine and publish this article, hopefully, it will be useful for readers, writers, and other researchers.

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DEVELOPMENT OF A DIGITAL BUSINESS STUDY PROGRAM BASED ON COLLABORATION OF MICRO, SMALL AND MEDIUM ENTERPRISES

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ABSTRACT

This study aims to determine the influence of the MSMEs collaboration learning model in the Digital Business study program on students' cognitive abilities in the field of digital-based entrepreneurship development. The study was conducted by involving MSMEs in the process of developing a digital-based business system in the digital business study program at the Akba Makassar University of Technology. The test data using the paired sample T-test technique in the cognitive domain of 20 students who were used as test samples were described in the aspect of digital-based business knowledge, the average pre-test score was 60.00 while the post-test results obtained an average score of 80.33, in the aspect of MSMEs knowledge, the average score was 57.00 while the post-test results obtained an average score of 80.50 and in the aspect of knowledge of digital-based business system development, the average score was 62.50 while the post-test results obtained an average score of 80.33. based on the results of the paired t-test on the pre-test and post-test treatments in SPSS

KEYWORDS : Digital Business ; MSMEs; Business Knowledge; Collaboration Learning

INTRODUCTION

Digital transformation is one of the main drivers of change in business. The digital revolution is changing the way we interact, shop, and work. Companies must be able to face technological changes quickly and use them to gain a competitive advantage (Rahmasari, 2023). The use of digital technology not only changes the way businesses work, but also creates new opportunities for human resource development. Micro, Small, and Medium Enterprises (MSMEs) play an important role in the national economy with a significant contribution to Gross Domestic Product (GDP) and job creation. The use of the digital economy helps its main players, MSMEs, to survive and develop marketing with easier and wider reach. (Juniansyah, 2022)

In addition to the opportunities with digitalization, it will also give rise to disadvantages. One of the disadvantages in the digital era is cyber crime, consumer protection which is still weak from a legal aspect (Aprilia, A., 2019). The challenges of MSMEs in the midst of the increasingly rapid digital economy require MSMEs to be literate in information technology because MSME actors who use internet services or have websites are still not many and familiar (Simangunsong, 2022). The urgent need to respond to community expectations, namely technology-savvy employees who want to work in digitally transformed organizations, and technology-savvy customers who expect companies to keep up (Ismail, 2017)

Responding to these challenges, the Digital Business Study Program of the Universitas Teknologi Akba Makassar is designed to produce graduates who are able to bridge the needs between technology and business. One of the strategic approaches taken is collaboration with MSMEs. This collaboration aims to ensure that the curriculum applied is not only theoretical, but also relevant to the needs of the world of work. Through collaboration-based projects, students can directly understand the digitalization needs of MSMEs, while MSMEs benefit from innovative solutions from students and lecturers.

This study aims to develop an effective collaboration model between the Digital Business Study Program of the Akba Makassar University of Technology and MSMEs. This model includes curriculum development based on market needs, increasing technological competency for MSMEs, and developing joint projects that can provide real impacts. With this approach, it is hoped that an educational ecosystem will be created that supports the development of digital-based MSMEs while producing competent graduates in the digital era.

This research is also an important contribution in exploring how higher education institutions can become strategic partners in supporting the digitalization of MSMEs, especially in the Makassar area and its surroundings. Thus, the results of this study are expected to be a reference for other higher education institutions that wish to adopt a similar model.

METHODOLOGY

This research employs a descriptive quantitative method to evaluate the effectiveness of the collaboration model in developing a collaboration-based MSME information system. The study focuses on assessing improvements in understanding and skills among students after the implementation of the collaboration model.

The paired t-Test is utilized as the primary statistical method to compare pre- and post-test results from participants. This test is appropriate for measuring the significance of changes in the dependent variable over two related time points: before and after the collaboration activities.

The sampling consisted of 20 students from the Digital Business Study Program at Universitas Teknologi Akba Makassar. These students were actively involved in collaborative projects with MSMEs, which included activities such as system development, problem-solving, and technology integration. Data collection was conducted through a combination of questionnaires, project evaluations, and individual assessments.

The study's procedure includes the following steps:

1. Pre-Test: A baseline assessment to measure students' initial understanding and skills.
2. Collaboration Implementation: Students worked directly with MSMEs to develop and implement solutions for digitalizing MSME processes.
3. Post-Test: A follow-up assessment to evaluate the improvement in their competencies.
4. Data Analysis: Paired t-Test analysis was performed to determine whether the differences in pre- and post-test results were statistically significant.

RESULT AND DISCUSSION

The results of this study demonstrate significant improvements in students' knowledge across various aspects after participating in the collaboration-based MSME information system development program. The paired sample t-Test technique was used to analyze the pre- and post-test scores for 20 students across three key knowledge domains: digital-based business knowledge, MSME knowledge, and digital business system development.

In the digital-based business knowledge aspect, the average pre-test score was 60.00, which increased to 80.33 in the post-test. This significant improvement indicates that the collaborative learning approach effectively enhanced students' understanding of digital business concepts.

For the MSME knowledge aspect, the average pre-test score was 57.00, while the post-test score rose to 80.50. This finding highlights the program's success in equipping students with practical knowledge about MSMEs and their operational challenges, particularly in a digital context.

Lastly, in the knowledge aspect of developing digital-based business systems, the average pre-test score was 62.50, which improved to 80.33 in the post-test. This demonstrates a substantial increase in students' technical skills and their ability to develop digital solutions tailored to the needs of MSMEs.

The paired sample t-Test analysis confirmed that the observed improvements across all three domains were statistically significant ($p < 0.05$). This finding underscores the effectiveness of the collaboration model in bridging theoretical learning with practical application.

The discussion reflects the benefits of integrating collaboration with MSMEs into the curriculum. By engaging directly with real-world problems, students not only gain deeper insights but also develop skills that are immediately applicable in professional settings. Additionally, MSMEs benefit from innovative solutions and technological insights provided by students.

These results suggest that the collaborative approach fosters a mutually beneficial relationship between the academic and business sectors, particularly in advancing digital transformation efforts. Future research could expand the sample size and explore long-term impacts on both students and MSMEs to further validate these findings.

CONCLUSION

This study demonstrates the effectiveness of a collaboration-based approach in developing the Digital Business Study Program at Universitas Teknologi Akba Makassar through partnerships with MSMEs. The implementation of this collaboration model has significantly improved students' knowledge in three critical domains: digital-based business concepts, MSME knowledge, and the development of digital business systems.

The paired sample t-Test results showed significant increases in students' post-test scores across all domains compared to their pre-test scores, indicating that the collaborative learning process successfully bridged theoretical understanding with practical application. This approach not only enhanced students' competencies but also provided tangible benefits for MSMEs, including access to innovative digital solutions and insights.

STATEMENT

The collaboration-based model developed in this research serves as a practical framework for integrating academic learning with real-world

applications. By engaging students in direct collaboration with MSMEs, this model fosters a dynamic learning environment that enhances students' competencies in digital business knowledge, MSME understanding, and digital system development.

The significant improvements observed in students' knowledge through pre- and post-test comparisons underline the effectiveness of this approach. Additionally, the collaboration provides mutual benefits, where students gain hands-on experience, and MSMEs receive innovative and practical solutions to address digital transformation challenges.

This study emphasizes the importance of partnerships between educational institutions and industry sectors, particularly in the context of preparing students for the demands of the digital economy while supporting the growth and sustainability of MSMEs.

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RECOGNITION OF SOUTH SULAWESI CUSTOMARY FORESTS: CHALLENGES AND OPPORTUNITIES AFTER CONSTITUTIONAL COURT RULING Number 35/ PUU-X/2012)

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ABSTRACT
Customary forests are forests that are within the territory of Customary Law Peoples as the main actors in improving their welfare. The purpose of this study is to analyze the position of customary forests after the Constitutional Court Decision Number 35 / PUU-IX / 2012, and analyze government policies in regulating customary forests after the Constitutional Court Decision Number 35 / PUU-IX / 2012 and its relationship with forest management in South Sulawesi. The type of research used is normative juridical research, which is research that is more focused on examining the application of rules and rules / norms in positive law in accordance with the problems studied. The results showed that there are still many customary forests that meet the requirements of the law but have not received government and state recognition. Even there are still state forests in customary forests, even though the Constitutional Court Decision states that in customary forests there are no state forests and customary forests as a source of livelihood for customary law communities are still being confiscated, both by the government and by business actors based on Business Use Rights where permits are issued by the government.
Keywords: recognition, customary forest, Constitutional Court ruling

A. Introduction

The existence of a customary law society and the rights contained in it have been guaranteed and recognized by the 1945 Constitution of the Republic of Indonesia (hereinafter abbreviated as the 1945 Constitution of the Republic of Indonesia) (Marham et al., 2023). So that the existence of customary law communities has a constitutional position in the Unitary State of the Republic of Indonesia. This is regulated in Article 18B paragraph (2) of the 1945 Constitution of the Republic of Indonesia that: "The State recognizes and respects the units of customary law communities and their traditional rights as long as they are alive and in accordance with the applicable laws and regulations (Mayastuti et al., 2022).

In addition, customary law communities are also recognized based on the MPR Tap Number IX/MPR/2001 concerning Agrarian Reform and Natural Resources Management. In Article 4 letter J stipulates that agrarian reform and natural resource management must be carried out in accordance with the principles of recognizing, respecting, and protecting the rights of customary law communities and the nation's cultural diversity over agrarian resources/resources (Eddy, 2022).

In addition to being regulated in the 1945 Constitution of the Republic of Indonesia and Tap MPR Number IX/MPR/2001, the Recognition of Customary Law Communities is contained in Law Number 5 of 1960 concerning Basic Agrarian Regulations (abbreviated as UUPA) (Descendants, 2023). In Article 5 of the UUPA, it is stipulated that "Agrarian law applicable to the earth, water and space is customary law, as long as it does not conflict with the interests of the nation and the State, which is based on the unity of the nation, with Indonesian socialism and with the regulations contained in this law and with other laws and regulations, including everything by heeding the elements that rely on religious law. Furthermore, it is also regulated in the Regulation of the Minister of Agrarian Affairs/Head of the National Land Agency Number 5 of 1999 where in Article 2 paragraph (2) it is stipulated that: The customary rights of customary law communities are considered to still exist if they meet the requirements (Efrianto, 2023): a) there is a group of people who still feel bound by their

customary law order as citizens of a certain legal alliance or suor, who recognize and apply the provisions of the alliance in their daily lives, b) there is certain customary land that is the living environment of the citizens of the legal alliance and where they take their daily living needs, and c) there is a customary law order regarding management, The control and use of customary land that applies and is obeyed by the citizens of the Law Alliance.

One of the assets of indigenous peoples is customary forests. Where the rights owned by customary law communities to manage forests come from the delegation of authority to control the state given by the state (Ragandhi et al., 2021). It seems that the recognition of customary forests has been clearly regulated in the 1945 Constitution of the Republic of Indonesia and the existing regulations under the constitution, but in Law Number 41 of 1999 concerning Forestry, it is considered challenging by a number of parties because it shows the wrong mindset in carrying out the constitutional mandate to guarantee the rights of customary law communities to customary forests (Perbawati & Evendia, 2021).

On that basis, the Alliance of Indigenous Peoples of the Archipelago (AMAN) submitted a material review of Law Number 41 of 1999 concerning Forestry to the Constitutional Court with registration number 35 /PUU-X/2012 (Commission, 2016). The applicant submitted a material test against the articles contained in Law Number 41 of 1999 concerning Forestry related to the status of customary forests and conditional recognition of customary law communities, which on May 16, 2013 was partially granted by the Constitutional Court (Pradhani, 2019).

According to the Constitutional Court, the 1945 Constitution of the Republic of Indonesia has clearly guaranteed the existence of the unity of customary law communities and their traditional rights as long as they are alive and in accordance with the development of society and the principles of the Unitary State (Qurochman & Diar, 2024). Furthermore, the Unitary State of the Republic of Indonesia is regulated by law as stated in Article 18B paragraph (2) of the 1945 Constitution of the Republic of Indonesia. In his explanation, it is

stated that even though it is called a customary law society, such a society is not static/unchanging, although the image of indigenous peoples in the past may most likely have changed (Suryawati & Syaputri, 2021). Even customary law communities with their customary rights in various places, especially in urban areas, have almost begun to disappear (Laturette, 2020). In fact, according to Émile Durkheim, such a society has changed from a society of mechanical solidarity to a society of organic solidarity (Schiermer, 2014). Durkheim further explained that the society of mechanical solidarity hardly knows the division of labor, prioritizes togetherness and uniformity, individuals must not stand out, generally cannot read and write, meet their own needs, and make important decisions left to them (Kemal, 1998). Such a society is a unique society and is recognized (respected) and respected by the 1945 Constitution of the Republic of Indonesia. On the contrary, the organic solidarity community has become familiar with various divisions of labor, the position of individuals is more prominent, the law is more developed because it is rational and deliberately made for a clear purpose (Amar Constitutional Court Decision Number 35/PUU-X/2012). .

Based on Article 1 number 6 of the Constitutional Court Decision Number 35/PUU-X/2012 stipulating Law Number 41 of 1999 concerning Forestry, the position "Customary forests are state forests located in the territory of indigenous peoples" is declared contrary to the 1945 Constitution. The Republic of Indonesia in 1945 and changed to "Customary forests are forests located in the territory of customary law communities" (Constitutional Court Decision Number 35/PUU-X/2012).

B. Research Methods

The type of research method used is normative juridical research, which is research that focuses more on examining the application of regulations and rules/norms in positive law in accordance with the problem being studied.

Data analysis was carried out in a qualitative descriptive manner. The analysis stage starts from data collection, this data is then presented

by selecting, classifying systematically and juridically to find out specific problems related to the research. Furthermore, the author interprets and compares theories and concepts from secondary data consisting of scientific books, journals, and related laws and regulations as well as the opinions of legal experts.

C. Discussion

1) Status of Customary Forests After the Constitutional Court Decision Number 35/PUU-IX/2012

Forests as one of Indonesia's natural resources as mandated in Article 33 paragraph (3) of the 1945 Constitution of the Republic of Indonesia that: "The earth, water, and natural resources contained in it are controlled by the state and used for the greatest possible prosperity of the people" (Yunita et al., 2022). Because it is given authority to the government to manage, utilize, maintain, and regulate legal acts of forest control by certain legal subjects (Law & Provisions, n.d.).

The mandate of Article 33 paragraph (3) is further regulated in Law Number 41 of 1999 concerning Forestry. In the context of the control and management of forest resources, Article 4 paragraph (1) of Law Number 41 of 1999 concerning Forestry stipulates that: "All forests located within the territory of the Republic of Indonesia, including the natural resources contained therein, shall be controlled by the state for the greatest possible prosperity of the people" (Law Number 41 of 1999) (Ahmad & Wahyuni, 2024). The meaning of "controlled" is not "owned" by the state, but as stipulated in the provisions of Article 4 paragraph (2) of Law Number 41 of 1999 concerning Forestry stipulates that the state authorizes the government to: (1) regulate and manage everything related to forests, forest areas, and forest products; (2) designate certain areas as forest areas and forest areas as non-forest areas; between humans and forests, as well as regulating legal acts related to forestry" (Law Number 41 of 1999).

The legal status of state forests and customary forests is very different. State forests based on the "right to control the state" are

public (*lex generalis*) and the position of the government based on Article 2 paragraph (2) of the UUPA, while customary forests as long as they have customary or traditional rights have a special status (*lex specialis*) (Dile, 2024) and customary law is applied in accordance with Article 5 of the UUPA. In essence, what is meant by "the right to control the state" does not apply in the law of indigenous peoples' rights and customary rights, although in fact the functional relationship between the two may still be regulated independently (Pasamai, 2024). Thus, government policies based on the "right to control the state" over state forests and customary forests must be different. In Article 1 paragraph (4) of Law Number 41 of 1999 concerning Forestry, it is stipulated that state forests are defined as forests that are on land and are not encumbered with land rights. Thus, customary forests certainly cannot be categorized as state forests, because customary forest areas have inherent rights to land owned by customary law communities that have been hereditary since ancient times and at that time people still embraced animism or belief in nature, because at that time the community highly appreciated and upheld the existence and state of nature (Perbawati & Evendia, 2021). This means that customary forests are not sourced from the state, but have existed long before the country was established. So far, forest areas have often been claimed as state forests. In fact, state forests will never exist as long as rights forests and customary forests have not been determined by the government.

The status of customary forests, which is synonymous with state forests as stated in Law Number 41 of 1999 concerning Forestry, has immediately caused an attitude of injustice towards customary law communities (Ungirwalu et al., 2021). That is why the struggle of the Alliance of Indigenous Peoples of the Archipelago (AMAN) to propose a material test of customary forests at the Constitutional Court is highly appreciated. In Decision No. 35/PUU-X/2012, the Constitutional Court granted the petitioners' request for partial. Among the decisions granted are as follows:

1. The word "state" in Article 1 number 6 of the Forestry Law is contrary to the 1945 Constitution of the Republic of Indonesia.

The word "state" in Article 1 number 6 does not have binding legal force, so it must be understood as "customary forests are forests located in the territory of customary law communities".

2. Article 4 paragraph (3) of the Forestry Law is contrary to the 1945 Constitution of the Republic of Indonesia. Therefore, the article must be interpreted as "forest control by the state still pays attention to the rights of customary law communities, as long as they are alive and in accordance with the development of society and the principles of the Unitary State of the Republic of Indonesia regulated in the law".
3. Article 5 paragraph (1) of the Forestry Law is contrary to the 1945 Constitution of the Republic of Indonesia. Therefore, even though Article 5 paragraph (1) of the Forestry Law reads "forests based on their status consist of; a. State forests, and; b. forest rights; It must still be interpreted as "State forest as referred to in paragraph (1) letter a, excluding customary forests".
4. Article 5 paragraph (2) of the Forestry Law is contrary to the 1945 Constitution of the Republic of Indonesia so it does not have binding legal force.
5. The phrase "and paragraph (2)" in Article 5 paragraph (3) of the Forestry Law is contrary to the 1945 Constitution of the Republic of Indonesia. The phrase "and paragraph (2)" in Article 5 paragraph (3) must be declared lost so that it must be read "the government determines the status of the forest as referred to in paragraph (1); and customary forests are determined as long as in reality the customary law community concerned still exists and is recognized for its existence".

2) Government Policy in Managing Customary Forests After the Constitutional Court Decision Number 35/PUU-IX/2012 and its derivatives.

The Constitutional Court's Decision No. 35/PUU-X/2012 which contains several important points, including (Greetings, 2023): (1) The

Constitutional Court's statement on Law No. 41 of 1999 concerning Forestry which has so far included customary forests as part of state forests is a form of negligence. against the rights of indigenous peoples and is a form of violation of the constitution. (2) Customary forests are excluded from those that were previously state forests, then included in the category of forest rights. (3). Land rights holders are forest rights holders. (4). The state's authority over state forests and customary forests is different. (5). Affirmation that indigenous peoples have rights (Constitutional Court Decision No. 35/PUU-X/2012).

There are several implications after the issuance of the Constitutional Court's decision, including (God, 2002): (1). The State is no longer allowed to take over the rights of customary law communities under its management except for reasons necessary for the development of the public interest as stipulated in Law Number 2 of 2012 or Presidential Regulation Number 71 of 2012 which regulates land acquisition for the public interest. . (2). After the Constitutional Court Decision No. 35/PUU-X/2012, the status of customary forests is no longer as a state forest, but as a forest whose rights are owned by customary law communities. (3). Customary forests are within the territory of customary rights, so the government must respect the jurisdiction of indigenous peoples.

After the Constitutional Court Decision Number 35/PUU-X/2012, customary law communities are also given a place for the protection of the forest that is their area, namely customary forests (Nugraha et al., 2023). This is affirmed in Government Regulation No. 45 of 2004 concerning Forest Protection, Article 8 paragraph (4). The protection of forest areas by indigenous peoples is carried out based on traditional wisdom that applies in the indigenous peoples concerned with assistance from the government, provincial governments, and district/city governments. Also, the Ministry of Forestry issued Circular Letter Number SE 1/Menhut-II/2013 concerning the Decision of the Constitutional Court Number 35/PUU-X/2012 dated May 16, 2013 addressed to Governors, Regents/Mayors and Heads of Forestry Services throughout Indonesia. In his presentation, the Minister of

Forestry emphasized that the determination of customary forest areas remains with the Minister of Forestry. The determination was made that indigenous peoples have been determined in advance by the Regional Government through Regional Regulations. Therefore, there are two stages for indigenous peoples in managing customary forests. The first stage is to encourage local government recognition of the existence of indigenous peoples and the second is to encourage the determination of the Minister of Forestry (Istikorini & Sari, 2022).

After the enactment of the Constitutional Court Decision, there was a shift in the status of customary forests, which were previously included in state forests, turned into part of forest rights (Sampara et al., 2019). The transition of customary forest status certainly brings a breath of fresh air to the customary law community (Fahmi et al., 2023). Customary law communities are no longer faced with rules that discriminate against or override their customary rights. The state as the holder of the right to control the state has limited authority over customary forests in accordance with the scope of its authority, because in accordance with the decision of the Constitutional Court, customary forests are no longer part of state forests, but are part of forest rights (Arizona & Illiyina, 2024).

Therefore, customary forests are part of the forest rights, so the holders of forest rights are the customary law communities (rights holders) themselves (Fauzi et al., 2024). In addition, after the enactment of the Constitutional Court Decision No. 35/PUU-X/2012, the constitutional rights of indigenous peoples have been restored, where customary law communities have full authority over their customary forests and the state no longer has the authority to control the forests (Soelistyowati, 2024).

Conclusion

a. The position of customary forests after the Constitutional Court Decision Number 35/PUU-IX/2012 is getting stronger because customary forests are no longer part of state forests, but are rights forests that are given full authority to customary law communities without interference by the state.

b. The Government's Policy in Managing Customary Forests After the Constitutional Court Decision Number 35/PUU-IX/2012 is that the State is no longer allowed to take over the rights of customary law communities under its management except for reasons necessary for the development of the public interest as stipulated in Law Number 2 of 2012.

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