

Proceedings of the 1st International Conference on Nusantara School of Thought

ICO-NUSA25

5 - 6 February 2025

Perlis, Malaysia

Editors:

Mohammad Reevany Bustami
Waluyo Adi Siswanto
Muhammad Asyraf Mohd Bakri
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Taghfirul Azhima Yoga Siswa



e ISBN 978-629-95777-0-6



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e-ISBN 978-629-95777-0-6

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Proceedings Books of the 1st International Conference on Nusantara School of Thought (ICO-NUSA25): Penyunting: Mohammad Reevany Bustami (Penyunting Utama), Waluyo Adi Siswanto, Muhammad Asyraf Mohd Bakri, Syed Ahmad Aidil Adha Bin Said Mad Zain, Hanif Abdurahman Siswanto, Rajih Arraki, Muhammad Ihsan Sandjaya, Taghfirul Azhima Yoga Siswa (Penyunting Bersekutu)

e-ISBN: 978-629-95777-0-6

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Penerbit:

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Preface

It is with great pleasure that I present to you the proceedings of the 1st International Conference on Nusantara School of Thought, held in February 2025 at Universiti Muhammadiyah Malaysia (UMAM). This conference, hosted by UMAM, in collaboration with the Centre for Policy Research at Universiti Sains Malaysia, the Peneleh Research Institute, and the Faculty of Law and the Faculty of Economics and Business at Universitas Sultan Ageng Tirtayasa, aims to foster a deeper understanding of the Nusantara region and its rich cultural and intellectual traditions.

The Nusantara School of Thought is an intellectual movement that seeks to engage with, revive, and promote the indigenous knowledge systems of Southeast Asia. This conference has provided a unique platform for scholars, researchers, and practitioners from diverse disciplines to gather, share, and critically examine the ways in which Nusantara perspectives can be leveraged to decolonize and indigenize knowledge across various fields. By exploring these perspectives, we aim to contribute to the global conversation on the importance of local wisdom and indigenous knowledge in contemporary academic discourse.

The papers presented in this volume reflect the dynamic and interdisciplinary nature of the conference. Topics range from education, law, and business to cultural preservation, and each contribution reflects the commitment of the authors to advancing the Nusantara School of Thought. Among the diverse themes, we find research on improving writing skills through peer review, fostering safety culture in high-risk industries, exploring coping mechanisms in teaching, integrating Islamic values in STEM education, and examining the role of technology in preserving waqf pesantren, among others.

Each of these papers embodies the spirit of the conference, offering new insights and perspectives on how indigenous and local knowledge can inform and transform contemporary practices. The thoughtful research in these proceedings contributes to a growing body of work dedicated to reclaiming and revitalizing Nusantara knowledge systems, providing essential tools for the decolonization and indigenization of education and practice in various domains.

I would like to express my deepest gratitude to all the contributors, reviewers, and participants whose efforts have made this conference a resounding success. Their scholarly work and commitment to the ideals of the Nusantara School of Thought ensure that this conference has made a meaningful contribution to academic dialogue and has set the stage for future collaboration among Nusantara scholars. I would like to also extend my heartfelt appreciation to Dr Mutiara Dwi Sari of UMAM who is the



Co-Chair of the Conference and her dynamic team in UMAM and beyond for making all these a reality and a success.

As we move forward, I hope that the insights shared at this conference will continue to inspire and challenge us all to think critically and innovatively about how we can embrace indigenous knowledge, decolonize our approaches, and build a more inclusive and equitable intellectual landscape for generations to come.

I invite you to explore the following pages, where you will find the invaluable contributions of our esteemed speakers and authors.

Associate Professor Dr. Mohammad Reevany Bustami

Head of Nusantara Malay Archipelago Research

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Universiti Sains Malaysia (USM)

Conference Chair

1st International Conference on Nusantara School of Thought (ICO-NUSA25)



Safety Culture Practices on Employee Achievement in High-Risk Companies

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Submitted: 31/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This study aims to examine the importance of implementing safety culture practices in helping employees achieve their work targets while reducing risks that may affect their well-being and job security. Safety culture encompasses various practices, such as providing adequate safety equipment, conducting regular safety training, ensuring leadership support for safety policies, and enforcing compliance with established Standard Operating Procedures (SOPs).

Methods: The research was conducted in companies operating in the electrical and chemical industries in Cilegon City, Banten Province. The study involved a sample of 120 employees, randomly selected from two sample companies. To analyze the data, this study employed the SEM-PLS method, which allows for testing the relationships between safety culture, job insecurity, and employee performance.

Results: The findings indicate that companies with a strong safety culture have a greater opportunity to enhance performance, ultimately contributing to the company's long-term success.

Conclusions: The study results conclude that companies implementing a strong and consistent safety culture can significantly reduce workplace accident risks. This directly contributes to a decrease in job insecurity among employees, allowing them to work more calmly, with greater focus, and increased motivation to achieve their performance targets.

Keywords:

Employee Performance, Job Insecurity, and Safety Culture

1. Introduction

Employee performance plays a strategic role in determining organizational success, especially for companies with high occupational risks, such as construction, electricity, mining, and manufacturing. Good employee performance not only includes technical abilities and operational skills but also proactive behavior toward safety and team collaboration. A study by Al Nahyan et al., (2024) found that employees who are emotionally engaged and highly motivated tend to pay more attention to safety, which in turn reduces workplace accident risks and simultaneously decreases feelings of job insecurity.

In high-risk work environments, optimal employee performance can reduce workplace accident rates and improve operational efficiency, ultimately having a positive impact on company profitability (Abeje & Luo, 2023). Therefore,



implementing a safety culture is crucial to ensuring employees' health, safety, and well-being, particularly in high-risk workplaces (Al-Mekhlafi et al., 2022). Safety culture not only improves employees' quality of work life but also directly impacts their performance and psychological security (Adekiya, 2024).

Employees who feel secure in their tasks tend to experience lower job insecurity, thereby enhancing their ability to handle risky situations (Boyas, 2024). Moreover, companies with a strong safety culture tend to experience overall organizational performance improvements, as adherence to safety protocols fosters a conducive work atmosphere and strengthens trust between employees and management (Al-Surimi et al., 2022).

The electrical and chemical industries are among the sectors with high occupational health and safety risks. Employees in these industries are required to strictly adhere to safety protocols, as non-compliance can lead to fatal workplace accidents, ultimately affecting overall performance. Therefore, effectively managing safety culture in the workplace is essential for creating a conducive environment that supports the company's vision and mission.

There are at least five categories of workplace accidents: fatality (accidents resulting in death), accident (accidents causing material loss), incident (accidents without direct impact on people), near miss (close calls with potential harm), and unsafe acts/conditions (unsafe behaviors or conditions). A preliminary study revealed an increasing trend in workplace accident reports in the electrical and chemical industries in Cilegon from 2022 to 2024. The number of workplace accidents in the electrical industry rose from 197 incidents in 2022 to 423 incidents in 2024, while in the chemical industry, the number increased from 282 incidents in 2022 to 411 incidents in 2024.

In the electrical industry, the most common incidents in 2023 included 45.18% unsafe acts/conditions, 30.46% incidents, and 13.20% near misses. This sharply increased in 2024, with unsafe acts/conditions rising to 62.88%. Meanwhile, in the chemical industry, 38.55% of cases in 2023 were unsafe acts/conditions, 26.31% were incidents, and 18.66% were near misses. In 2024, these figures changed to 34.12% unsafe acts/conditions, 32.31% incidents, and 11.66% near misses.

Interviews indicated that the majority of workplace accidents were caused by unsafe employee behavior, such as failing to wear complete personal protective equipment (PPE) or not following proper work procedures. The high incidence of workplace accidents is suspected to negatively impact employee performance evaluations. Thus, to enhance employee performance in the high-risk electrical and chemical industries in Cilegon, implementing safety culture is essential. This aligns with research by Birana et al., (2023); Gunawan et al., (2022); Hong et al., (2023) which showed that fostering a positive safety culture improves performance by reducing job insecurity. Therefore, this research problem is formulated as follows: How can job insecurity be reduced to improve employee performance through safety culture?

2. Literature Review

A safe work environment provides employees with a sense of certainty that the company prioritizes their well-being, thereby reducing feelings of job insecurity (Lee et al., 2020). A study by Atikasari et al., (2022) found that a strong safety culture can also alleviate employees' anxiety about job security. When a company fosters a robust



safety culture, employees feel more valued and protected, ultimately enhancing their sense of stability in their jobs. This reduces concerns about job loss, especially in high-risk industries. Research Bahrami Azar et al., (2023) highlights that effective safety management creates a climate of trust and greater workplace engagement, thereby minimizing uncertainty. Employees in companies that emphasize workplace safety tend to experience lower anxiety about their job future. Additionally, Bautista-Bernal et al., (2024) revealed that a strong safety culture reinforces employee loyalty to the company, as they feel protected, particularly during periods of economic uncertainty. Companies with well-established safety cultures create a safer and more stable work environment, which reduces job uncertainty. In line with this, a study by Chandra & Djunaidi (2022) states that companies emphasizing the importance of safety culture enhance employees' sense of security regarding their jobs.

A strong safety culture, which includes the company's commitment to safety, comprehensive training, and strict implementation of safety procedures, not only prevents workplace accidents but also increases job satisfaction, motivation, and employee productivity (Bellini et al., 2022). A safe work environment can reduce stress, positively impacting employees' ability to work more efficiently and focus on their tasks (Birana et al., 2023). Research by Chirumbolo et al., (2022) shows that safety culture enhances job satisfaction and employee commitment to the company, which directly contributes to performance improvement. When employees feel that their safety is a priority, they are more motivated to contribute their best efforts. Furthermore, Christianawati & Wijono (2023) found that a workplace safety culture drives productivity growth by fostering a sense of security that strengthens employee loyalty. This loyalty reduces absenteeism and turnover rates, positively impacting long-term performance. Darvishmotevali & Ali (2020) noted that companies with a strong safety culture have higher-performing employees because they feel more engaged and emotionally connected to the organization. Dewi & Gentari (2021) found that safety culture positively correlates with efficiency and effectiveness in task execution, as employees feel safer, reducing psychological distractions that typically hinder optimal performance.

Job insecurity is often associated with decreased employee performance as it can lead to anxiety, lack of focus, and reduced motivation to complete tasks (De Angelis et al., 2021). A study by Hendarti et al., (2021) found that job insecurity correlates with increased absenteeism and decreased employee engagement within the organization. Employees who perceive their jobs as unstable may reduce their commitment and loyalty to the company, ultimately affecting overall performance. Furthermore, research by I. K. A. P. Gunawan & Ardana, (2020) found that high levels of job insecurity often impair decision-making skills and accuracy in completing tasks, as employees focus more on their concerns than on their work. Another study by Kim & Kim (2020) found that employees experiencing job insecurity exhibit lower job satisfaction levels, which negatively impacts work quality.

3. Theoretical Framework

Resilience Safety Theory

This study applies the Resilience Safety Theory, which focuses on an individual's or organization's ability to effectively adapt to risks, challenges, and uncertain



working conditions while maintaining safety and optimal performance. This theory emphasizes the importance of an organization's or individual's capacity to recognize, respond to, and overcome disruptions or threats to safety and work efficiency. Therefore, organizations must proactively manage risks, even in uncertain situations (Setiadi, 2023).

Beyond accident prevention, this theory also highlights the importance of rapid recovery following incidents or pressure. In organizations with a strong safety culture, employees feel safer both physically and emotionally. This helps reduce job insecurity, such as concerns about layoffs, unsafe working conditions, or loss of job protection. Thus, when organizations demonstrate a commitment to safety, employees trust that the company cares about their well-being, reducing anxiety about job loss or neglect of their rights (Wirawan et al., 2024).

Resilience safety helps organizations prepare for unexpected challenges, ensuring work processes remain efficient despite disruptions. Organizations that prioritize resilience safety and safety culture tend to provide training to enhance workers' skills, leading to increased productivity and innovation (Feng & Trinh, 2019). This approach is relevant not only for physical safety but also for employees' psychological and emotional well-being.

Safety Culture

Safety culture is defined as the attitudes, beliefs, and behaviors that create a safe working environment (Bahrami Azar et al., 2023). It is a critical component in fostering a work environment that prioritizes safety and health while reducing workplace accidents (Bautista-Bernal et al., 2024).

Safety culture reflects the values held by organizational members regarding workplace safety, indicating the level of attention and commitment to safety in daily behavior and decision-making within the organization (Hafeez et al., 2022). Management that supports safety practices can strengthen safety culture (Perez et al., 2024), providing a framework for safe behavior throughout the organization (Naji et al., 2021).

In summary, safety culture is defined as a set of values and norms upheld by individuals in an organization concerning occupational safety and health. The implementation of safety culture in companies is closely linked to various legal regulations and standards, including:

1. Law No. 13 of 2003 on Manpower – Covers provisions on occupational safety and health, requiring companies to create a safe and healthy work environment for employees.
2. Government Regulation No. 50 of 2012 on Occupational Health and Safety Management Systems – Mandates companies to implement a management system covering safety and health aspects, aligned with the development of safety culture.
3. ISO 45001:2018 – An international standard providing a framework for occupational health and safety management systems, encouraging organizations to develop a strong safety culture as part of workplace safety risk management.
4. Guidelines from the Indonesian Ministry of Manpower – Establish instructions on implementing safety culture that companies must follow. These guidelines summarize best practices and necessary steps to build a safety culture.



Job Insecurity

The phenomenon of job insecurity is not a new concept in the business and organizational environment (Stankevičiūtė et al., 2021). Job insecurity is defined as employees' uncertainty or concern about their job future, including the possibility of job loss or status reduction (Soelton et al., 2021). It also refers to the uncertainty individuals feel regarding their job continuity (Kim & Kim, 2020).

Job insecurity is not only related to the fear of job loss but can also lead to stress, anxiety, and negative effects on individuals' mental health (Chirumbolo et al., 2022). It can disrupt an individual's psychological and physical well-being, thereby affecting their productivity and performance at work (Gerungan & Kindangen, 2022).

In conclusion, job insecurity refers to a condition where individuals feel uncertain about their job future, which can have adverse effects on mental health.

Employee Performance

Employee performance encompasses not only work outcomes but also behaviors that influence organizational effectiveness (Robbins & Judge, 2018). It refers to the results of employees' actions, behaviors, and contributions toward achieving organizational goals. In this context, performance is measured not only by final outcomes but also by the processes undertaken to achieve them (Abeje & Luo, 2023).

Employee performance is a measurable set of results that reflects an individual's contribution to organizational goals, as well as their ability to adapt to workplace changes and challenges (Zheng et al., 2020). Various factors influence employee performance, including motivation, skills, and the work environment (Muñoz Medina et al., 2022). High performance benefits not only individuals but also the entire organization.

Based on this explanation, employee performance refers to the results achieved by individuals within an organization, reflecting their contributions to achieving goals and supporting organizational success.

4. Methods

This study is a causal research aiming to explain causal relationships by testing hypotheses related to the influence of safety culture on job insecurity and employee performance. The three research variables are measured using an Agree-Disagree Scale with values ranging from 1 to 10 (Arikunto, 2019). Safety culture is assessed using four indicators: management commitment, safety communication, education and training, and employee concern (Bautista-Bernal et al., 2024; Naji et al., 2021; Perez et al., 2024). Job insecurity is measured using four indicators: job status uncertainty, fear of job loss, perception of company conditions, and reduced engagement (Chirumbolo et al., 2022; Gerungan & Kindangen, 2022; Kim & Kim, 2020). Employee performance is evaluated using four indicators: achievement of targets (work quantity), work quality, timeliness of task completion, and work initiative (Dewangga & Rahardja, 2022; Nurasniar, 2021; Pramono & Prahiawan, 2021).

The study population consists of employees working in the electrical and chemical industries in Cilegon City. The sample size is determined using the rule of 5 to 10 times the number of research indicators (Ferdinand, 2019). Since this study includes 12



indicators in total, the sample size is calculated as $10 \times 12 = 120$ samples. A simple random sampling technique is used to select participants from two representative companies in the electrical and chemical industries in Cilegon City.

Data collection is conducted using questionnaires as the primary instrument, supplemented by observations and interviews. The study employs Structural Equation Modeling-Partial Least Square (SEM-PLS) for data analysis, implemented using SmartPLS software (Ghozali, 2019b).

5. Results

Results of Measurement Model Testing

The measurement model is used to verify whether the data obtained from the questionnaire distribution is valid and reliable for hypothesis testing (Ghozali, 2019). Based on data processing, the following measurement model test results are presented:

Table 1: Measurement model test results

	Job Insecurity	Employee Performance	Safety Culture
JI1	0,879		
JI2	0,938		
JI3	0,941		
JI4	0,874		
KIN1		0,919	
KIN2		0,867	
KIN3		0,915	
KIN4		0,537	
SC1			0,877
SC2			0,953
SC3			0,899
SC4			0,859

Indicators meet the convergent validity assumption if their outer loading > 0.5 . Table 1 shows that the outer loading ranges for each variable are Safety Culture (SC): 0.859 – 0.953; Job Insecurity (JI): 0.874 – 0.941; and Employee Performance (KIN): 0.537 – 0.919. Referring to the convergent validity assumption, all indicators are valid as their outer loading values exceed 0.5 (Ghozali, 2019).

Once outer loading meets convergent validity assumptions, the next step is to assess construct validity through discriminant validity testing. Discriminant validity is achieved if the Average Variance Extracted (AVE) > 0.5 (Ghozali, 2019). The AVE values for the three research variables are presented below:

Table 2: Average Variance Extracted (AVE)

	Average Variance Extracted (AVE)
Job Insecurity	0,825
Employee Performance	0,681
Safety Culture	0,806



From the table, it is known that all constructs obtained AVE values as follows: safety culture (0.806); job insecurity (0.825); and employee performance (0.681). Since the AVE values of all three constructs are > 0.5 , the assumption of discriminant validity is considered to be met.

The next step is the reliability test to determine the consistency of the respondents' answers on the research instrument by examining the Cronbach's alpha and composite reliability values. A construct is considered reliable if it has a Cronbach's alpha and composite reliability value > 0.7 (Ghozali, 2019). Below are the results for the Cronbach's alpha and composite reliability values of the research constructs:

Table 3: Cronbach's Alpha and Composite Reliability

	Cronbach's Alpha	Composite Reliability
Job Insecurity	0,929	0,950
Employee Performance	0,838	0,891
Safety Culture	0,919	0,943

It is known that the constructs have Cronbach's alpha and composite reliability values > 0.7 . The construct with the lowest Cronbach's alpha and composite reliability values is employee performance, with a Cronbach's alpha of (0.838) and composite reliability of (0.891). This result shows that all research constructs have met the reliability assumption. Therefore, the estimated measurement model can be described as follows:

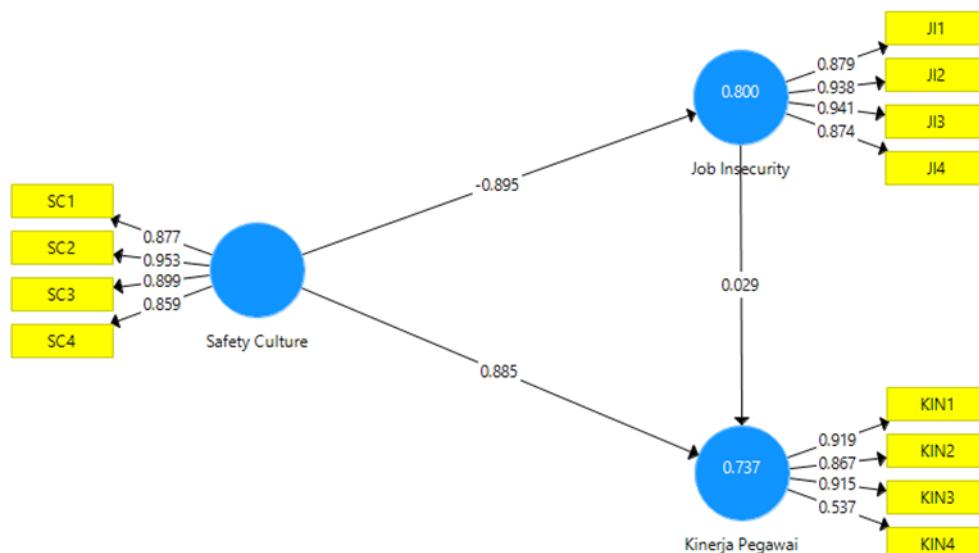


Figure 1: Measurement model test results

Results of Structural Model Testing

Path Coefficient

Path coefficient testing determines the relationship between latent variables and the direction of their influence. The test results are as follows:

Table 4: Path Coefficient

	Job Insecurity	Employee Performance
Job Insecurity		0,029
Safety Culture	-0,895	0,885



The effect of safety culture on job insecurity is known to have a path coefficient of 0.895 (negative), which means there is a negative relationship between safety culture and job insecurity. This number indicates that if the safety culture value increases by 1 unit, job insecurity will decrease by 0.895 units. The negative sign on the path coefficient shows that the better the safety culture implemented, the lower the job insecurity felt by employees.

The effect of safety culture on employee performance is known to have a path coefficient of 0.885 (positive), which means there is a positive relationship between safety culture and employee performance. This number indicates that if the safety culture value increases by 1 unit, employee performance will increase by 0.885 units. The positive sign on the path coefficient shows that the better the safety culture, the higher the employee performance achieved.

The effect of job insecurity on employee performance is known to have a path coefficient of 0.029 (positive), which means there is a positive relationship between job insecurity and employee performance. This number indicates that if the job insecurity value increases by 1 unit, employee performance will increase by 0.029 units. The positive sign on the path coefficient shows that the better the job insecurity, the higher the employee performance achieved.

R Square (R^2) Test

The R Square test measures the simultaneous effect of independent variables on dependent variables.

Table 5: R Square

	R Square
Job Insecurity	0,800
Employee Performance	0,737

The analysis of the R square value is conducted to see how much the independent variables (simultaneously) explain the variation in the dependent variable. From Table 5, the R Square value for job insecurity is 0.800, indicating that 80% ($0.800 \times 100\%$) of job insecurity is explained by safety culture. Meanwhile, the R Square for employee performance is 0.737, indicating that 73.7% ($0.737 \times 100\%$) of employee performance is explained by safety culture and job insecurity.

Hypothesis Testing Results

Hypothesis testing is conducted using the t-statistic and p-value, with a significance level of 5% (0.05). A hypothesis is accepted if $t\text{-statistic} > 1.960$ or $p\text{-value} < 0.05$ (Ghozali, 2019).



Table 6: Hypothesis Test Results

	Original Sample	T Statistics	P Values
Job Insecurity -> Employee Performance	0,029	0,249	0,402
Safety Culture -> Job Insecurity	-0,895	41,540	0,000
Safety Culture -> Employee Performance	0,885	8,311	0,000

Safety culture on job insecurity obtained a t-statistic value of 41.540 with a p-value of 0.000. Since the t-statistic value is greater than the t-table value ($41.540 > 1.960$) and the p-value is less than 0.05 ($0.000 < 0.05$), these results indicate that safety culture has a significant impact on job insecurity. The original sample value of -0.895 (negative sign) shows that safety culture has a negative influence of 89.5% on job insecurity. Therefore, H1, which states that the better the safety culture, the lower the job insecurity perceived by employees, is accepted.

Safety culture on employee performance obtained a t-statistic value of 8.311 with a p-value of 0.000. Since the t-statistic value is greater than the t-table value ($8.311 > 1.960$) and the p-value is less than 0.05 ($0.000 < 0.05$), these results indicate that safety culture has a significant impact on employee performance. The original sample value of 0.885 (positive sign) shows that safety culture has a positive influence of 88.5% on employee performance. Therefore, H2, which states that the better the implemented safety culture, the better the employee performance, is accepted.

Job insecurity on employee performance obtained a t-statistic value of 0.249 with a p-value of 0.402. Since the t-statistic value is less than the t-table value ($0.249 < 1.960$) and the p-value is greater than 0.05 ($0.402 > 0.05$), these results indicate that job insecurity does not have a significant impact on employee performance. The original sample value of 0.029 (positive sign) shows that job insecurity only has an influence of 2.9% on employee performance. Therefore, H3, which states that the lower the job insecurity perceived, the better the employee performance, is rejected.

6. Discussion

Influence of Safety Culture on Job Insecurity

Safety culture is a crucial element in high-risk industries such as electricity and chemicals. Research shows that employees' perceptions of health and safety regulations (K3) have a negative relationship with job insecurity, as evidenced by a t-statistic value greater than the t-table value ($41.540 > 1.960$) and a p-value smaller than 0.05 ($0.000 < 0.05$), with an original sample value of -0.895 (negative sign). This means that the more positive employees' perceptions of K3 regulations, the lower the job insecurity they feel. Conversely, a negative perception of K3 regulations can increase feelings of insecurity in the workplace.

The finding that safety culture affects job insecurity suggests that a work environment prioritizing safety can reduce job insecurity among employees. With clear safety procedures, adequate training, and management's commitment to employee welfare, concerns about job loss can be minimized (Maghfira & Larassati, 2024). This supports the theory that a safe work environment provides certainty and stability for employees, making them feel more protected in performing their tasks.



Other studies Lei et al., (2024) have found that toxic work environments have a positive correlation with job insecurity, with a correlation value of $r = 0.664$ and $p < 0.05$. This indicates that a poor work environment can increase feelings of insecurity among employees. In the petrochemical industry context, an analysis of safety culture dimensions shows that management commitment, training, and incident reporting culture significantly affect safety performance. These dimensions can influence employees' perceptions of their job security.

These findings emphasize the importance of a positive safety culture within an organization. Employees' perceptions of management's commitment to implementing K3 regulations and a supportive work environment play a crucial role in reducing job insecurity. This aligns with the theory that a safe and supportive work environment can improve employees' psychological well-being.

Influence of Safety Culture on Employee Performance

Safety culture plays an important role in improving employee performance, especially in high-risk industries like electricity and chemicals. Research shows that the effective implementation of safety culture can enhance employee performance. Hypothesis testing results, with a t-statistic value greater than the t-table value ($8.311 > 1.960$) and a p-value smaller than 0.05 ($0.000 < 0.05$), along with an original sample value of 0.885 (positive sign), show that safety culture has a positive influence on employee performance.

Employees working in a safe environment with clear safety procedures tend to be more focused, productive, and motivated to perform better. A strong safety culture also fosters loyalty and employee commitment to the company, contributing to individual and organizational performance improvements (Prasetyawan et al., 2024).

A study Prayoga et al., (2024) found that the implementation of health and safety (K3) had a positive and significant impact on employee performance. Multiple linear regression analysis showed that K3 variables significantly influenced employee performance. Another study Retnani et al., (2024) also supported these findings, stating that K3 implementation positively affects employee performance.

These findings support the theory that a safe and healthy work environment increases employees' motivation and job satisfaction, which in turn enhances their performance. A strong safety culture creates a positive perception among employees regarding the organization's commitment to their well-being, which can improve loyalty and productivity.

Influence on Job Insecurity on Employee Performance

One of the interesting findings of this research is the absence of a significant impact of job insecurity on employee performance. This was proven by hypothesis testing that resulted in a t-statistic value smaller than the t-table value ($0.249 < 1.960$) and a p-value greater than 0.05 ($0.402 > 0.05$). The original sample value of 0.029 (positive sign) shows that job insecurity only has a 2.9% influence on employee performance.

The results of this study suggest that although employees feel insecure about the continuity of their work, this does not always negatively impact their productivity or performance. Possible reasons for this phenomenon include employees' resilience, other motivational factors, and varying perceptions of job insecurity. Employees in the



electricity and chemical industries may have a high level of resilience, allowing them to continue working optimally despite job uncertainty. Moreover, factors like incentives, job satisfaction, or career development opportunities might have a greater influence on performance than the feeling of job insecurity.

This research found that not all employees who feel insecure about their jobs see it as an obstacle. Some even view it as a challenge that drives them to work harder to remain in the organization, as seen in the study by Nurwidiawati & Rahayu (2024), which stated that job insecurity does not significantly affect employee performance. Another study by Kinasih & Kusumawati (2024) also concluded that job insecurity, in isolation, does not significantly affect employee performance.

These findings offer a different perspective on the relationship between job insecurity and performance, particularly in the context of the electricity and chemical industries. This indicates the importance of considering other factors that may influence this relationship and the need for further research to better understand these dynamics.

7. Conclusion

The research findings on the relationship between safety culture, job insecurity, and employee performance indicate that safety culture significantly influences job insecurity and employee performance, while job insecurity does not have a significant impact on employee performance. Overall, this study highlights the importance of safety culture in reducing job insecurity and enhancing employee performance in the electricity and chemical industries. Although job insecurity is often perceived as a factor that can reduce productivity, the results of this study show that this is not always the case. Therefore, companies should focus more on developing a strong safety culture and other motivational factors to ensure employees remain productive even in uncertain work conditions.

For the electricity and chemical industries in Cilegon City, these findings provide valuable insights that establishing a safety culture is not only about regulatory compliance but also serves as a strategy to improve employee productivity. Companies can take measures such as increasing investment in workplace safety, ensuring transparent communication, and focusing on key performance-driving factors.

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Individual Coping Mechanism in Teaching: A Primary and Higher Education Perspective

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Submitted: 30/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This review synthesizes individual coping mechanisms across primary and higher education, identifying actionable strategies and providing insights for educators, policymakers, and researchers to create supportive educational environments.

Methods: Employing a narrative and systematic literature review approach, the study examines research published between 2015 and 2025 from databases such as Google Scholar, Mendeley References, Publish or Perish, and ERIC, using the SPIDER framework for selection criteria.

Results: Findings revealed that teachers employ problem-focused strategies like planning and training, alongside emotion-focused approaches such as mindfulness and social support. While primary education teachers lean on community support, higher education teachers prioritize self-regulation, with cultural influences and technological challenges also shaping the effectiveness of these strategies.

Conclusions: The review concluded that mindfulness, time management, and peer support are effective coping mechanisms, with primary education promoting from structured support and higher education emphasizing self-directed strategies, highlighting the need for personalized interventions.

Keywords:

Coping Mechanism, Stress Management, Teaching, Education

1. Introduction

Teaching is widely recognized as one of the most demanding and high-stress professions, where educators face ever-increasing expectations from curriculum changes, administrative responsibilities, and the integration of rapidly advancing technologies into classroom settings. Research by (Skaalvik & Skaalvik, 2021) underscores the heightened levels of stress and emotional exhaustion experienced by teachers, often stemming from structural and organizational demands within schools. These stressors not only compromise teacher well-being but also poorly affect their professional performance, resulting in significant implications for the quality of education delivered. Addressing these challenges requires a variety understanding of the coping mechanisms educators employ to navigate the complexities of their roles. There are many different manifestations of stress in the teaching profession, ranging from physical exhaustion to emotional anguish. Stress is frequently brought on by an



imbalance between the demands placed on teachers and the resources that are available to them. (Fadare et al., 2024) emphasize that teachers in resource-constrained environments, such as public schools in Kwara State, Nigeria, often struggle with inadequate stress management strategies, resulting in diminished productivity and well-being. Effective stress management, therefore, becomes pivotal for sustaining teacher efficacy and ensuring the broader success of educational systems.

This literature review aims to synthesize existing research on individual coping strategies among teachers and analyze their application across primary and higher education settings. By exploring the similarities and differences between these contexts, it seeks to provide actionable insights for educators, policymakers, and researchers. The following research questions guide this review:

1. What are the effective individual coping mechanisms in teaching contexts across primary and higher education?
2. How do these mechanisms differ between primary and higher education teachers?

By addressing these questions, this review not only fills a critical gap in the literature but also underscores the importance of targeted interventions to enhance teacher resilience and well-being. These insights are essential for creating a more sustainable and effective educational environment.

2. Literature Review

The theoretical framework for coping strategies, as proposed by (Lawver & Smith, 2014; Lazarus, R. S., & Folkman, 1984), categorizes them into two primary approaches: problem-focused and emotion-focused coping. Problem-focused strategies are proactive and solution-oriented, such as time management, professional development, and the strategic utilization of available resources. Emotion-focused strategies, on the other hand, target the emotional impact of stress, employing techniques such as mindfulness, cognitive restructuring, and relaxation practices to alleviate distress. These strategies are integral to enabling educators to maintain their mental health and professional commitment among demanding circumstances. (Savage & Woloshyn, 2022) found that teachers employing active coping strategies not only reported reduced stress levels but also demonstrated enhanced psychological well-being, further underscoring the importance of adaptive coping mechanisms.

The nature and degree of stressors change greatly across elementary and higher education settings, reflecting disparities in obligations and challenges. Elementary school teachers are pressured because they have to manage a classroom, meet the needs of varied young learners, and teach students essential skills. Higher educators, on the other hand, are concerned with the relationship between research and teaching, managing institutional policies, and understanding the complexity of adult learning. (Necsoi, 2018) highlights, Interventions, therefore, must be adjusted to the different stressors and coping needs of educators based on the level of the education system they work in. The kind of stress that comes to the fore in elementary settings is the challenge of managing discipline and creating a positive and inclusive learning environment for diverse learners. Such demands include trying to meet the academic outcomes as well as maintaining discipline, which weighs heavily on the teachers in these contexts. In contrast, higher education faculty face unique pressures related to



their dual roles as educators and researchers. The expectation to produce scholarly work while simultaneously delivering highquality teaching often leads to role conflict and emotional strain (Hussain et al., 2019). Understanding these distinctions is crucial for developing interventions that are both effective and contextually appropriate. The integration of technology in education, while offering transformative opportunities for enhancing teaching and learning processes, has also introduced significant stressors for educators.

Teachers are now expected to navigate a rapidly evolving digital era, mastering new tools and platforms with limited training and support. This challenge is particularly noticeable in resource-constrained settings, where access to digital infrastructure and professional development opportunities may be inadequate. (Kisanga & Kisanga, 2020) found that the lack of technical knowledge and limited availability of assistive technologies were major stressors for educators and students alike, particularly in higher education institutions in Tanzania. The COVID-19 pandemic further exacerbated these challenges, as global educators were forced into online teaching with minimal preparation. (Anero & Tamayo, 2023) highlight how this abrupt transition intensified stress levels adjusted teachers, who had to adapt to new teaching modalities while addressing the emotional and academic needs of their students. The pandemic underscored the critical importance of resilience, adaptability, and professional collaboration in navigating such disruptions, providing valuable lessons for future crisis management in education.

Coping mechanisms are very useful in helping teachers deal with stress and perform their functions efficiently. They can be divided into individual and organizational strategies. Individual strategies are personal resilience and self-regulation techniques such as mindfulness, exercise and time management. The organizational strategies however are the systematic approaches developed to minimize sources of stress and enhance support for teachers. These may include professional development programs, workload adjustments, and the provision of adequate resources. (Hussain et al., 2019) revealed that secondary interventions such as mindfulness training and cognitive behavioral therapy are important in building the capacity of teachers to manage stress effectively through coping strategies. These findings on coping are multifaceted and point to the need for a holistic approach to address both individual and systemic factors.

3. Methods

This literature review employs both a narrative and systematic literature review approach. The narrative review provides a broad context and theoretical discussion of coping mechanisms in teaching. Simultaneously, a systematic review ensures accuracy by applying clearly defined inclusion and exclusion criteria.

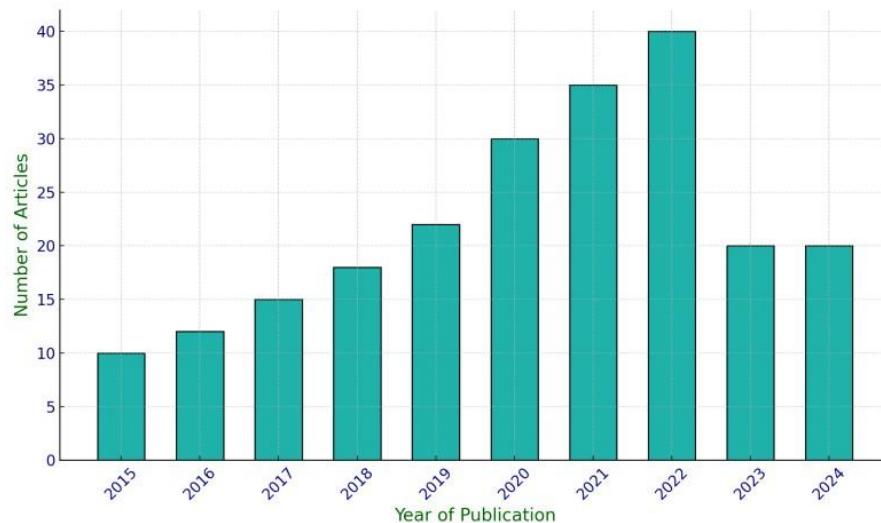


Search strategies

This study employed a systematic search strategy to identify relevant literature on individual coping mechanisms in teaching across primary and higher education settings. The databases used included Google Scholar, Mendeley references, Publish or Perish, and ERIC. The search was conducted using specific keywords such as 'coping mechanisms in teaching', 'stress management for teachers', 'coping mechanism in education', and 'teacher stress management', focusing on studies published between 2015 and 2025. The selection process was guided by the SPIDER framework to refine inclusion and exclusion criteria. The framework targeted educators as the primary sample, focusing on individual coping strategies, with studies employing cross-sectional, longitudinal, or mixed-method designs being prioritized. Articles were required to provide empirical data on the effectiveness of coping mechanisms in improving teacher well-being and performance. Additional filters, such as publication language (English or Bahasa Indonesia), and full-text availability, were applied to ensure quality and relevance.

The following figure shows the number of articles published by year after selection and inclusion criteria. This data displays the research trend over time, indicating the intensity and consistency of relevant articles.

Inclusion Criteria and Selection



Note: The articles were sourced from databases including Google Scholar, ERIC, and Publish or Perish.

Figure 1: Distribution of Papers

Figure 1 shows a total of 222 articles collected for analysis came from various trusted sources such as Google Scholar, Mendeley references, ERIC, and Publish or Perish. These articles cover publications from 2015 to 2024, with a significant increase in numbers in recent years. The main topics raised include teacher stress management, strategies for handling workload, classroom management, and the impact of stress on teaching effectiveness. The higher distribution of articles in recent years reflects increased attention to teacher wellbeing among the challenges of modern education, especially during and postCOVID-19 pandemic. These data provide a strong basis for



analyzing trends, patterns, and innovations in stress management in education. The method used to analyze search results is by using the PRISMA method with content analysis techniques.

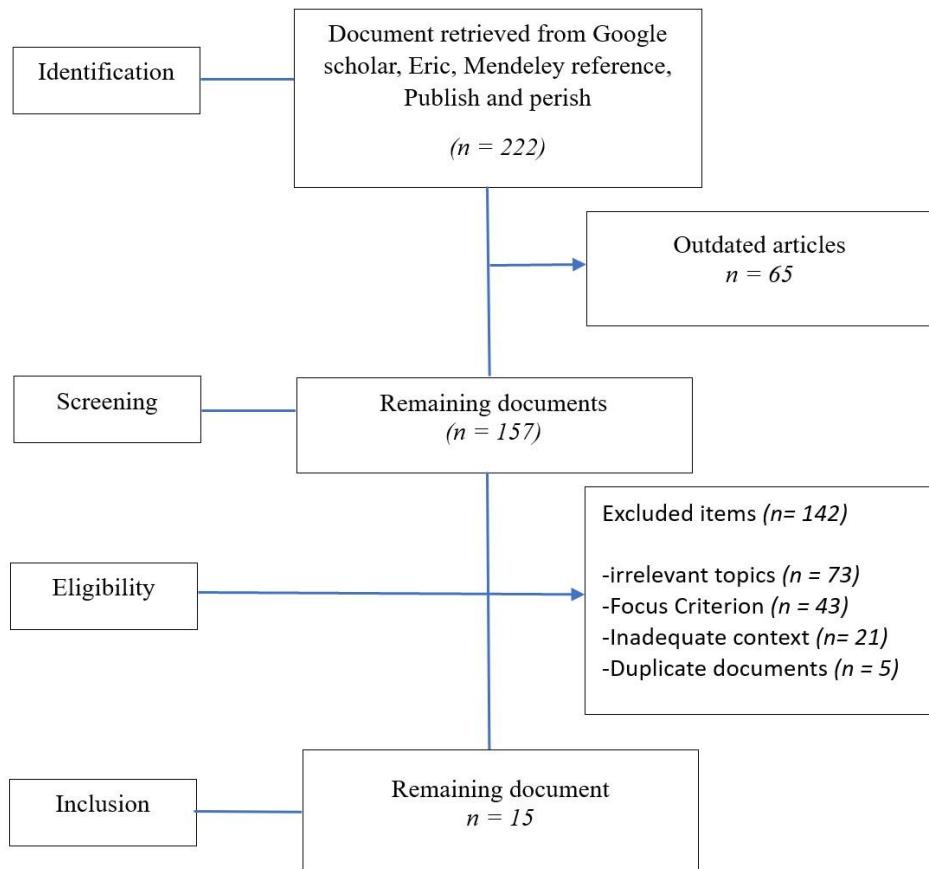


Figure 2: Flowchart of Article selection

Figure 2 shows that the article selection process follows systematic steps. The first stage was identification, where 222 documents were taken from various sources, including Google Scholar, ERIC, Mendeley references, and Publish or Perish. After identification, these documents are screened to remove items regarded outdated. A total of 65 articles were excluded at this stage, leaving 157 documents for further processing. The next stage is a feasibility evaluation, where the remaining documents are examined in depth. A total of 142 documents were excluded for various reasons, such as inappropriateness to the topic (73 documents), not meeting focus criteria (43 documents), insufficient context (21 documents), and duplication (5 documents).

After a severe selection process, only 15 documents met the final inclusion criteria. These documents are considered relevant and of good quality for further analysis in research. This process shows a thorough and systematic approach in selecting the literature used for the study. The next stage is a feasibility evaluation, where the



remaining documents are examined in depth. A total of 142 documents were excluded for various reasons, such as inappropriateness to the topic (73 documents), not meeting focus criteria (43 documents), insufficient context (21 documents), and duplication (5 documents). The review employed the SPIDER framework to organize and refine the inclusion and exclusion criteria:

1. Sample (S): The review focused on educators, including teachers in primary and higher education settings. Participants included novice and experienced teachers who are directly involved in teaching processes and experience work-related stress.
2. Phenomenon of Interest (PI): The primary focus was on individual coping mechanisms for stress management. These include mindfulness practices, time management, and cognitive restructuring as strategies employed by teachers to mitigate stress.
3. Design (D): Studies included in the review utilized various designs, including cross-sectional, longitudinal, and mixed-methods approaches. Research employing qualitative interviews, quantitative surveys, or experimental interventions was considered.
4. Evaluation (E): The outcomes of interest included the effectiveness of coping mechanisms in reducing stress levels, improving psychological well-being, and enhancing job performance of teachers.
5. Research Type (R): The review incorporated both primary studies and systematic reviews that examined individual coping mechanisms in educational contexts. Only peer-reviewed articles were included to ensure the quality of the sources.

The review included articles published between 2015 and 2025 that focused on individual coping mechanisms employed by teachers in educational contexts. Only peer-reviewed studies written in English or Bahasa Indonesia were considered. Articles needed to directly address strategies for stress management at the individual level, providing specific insights into their application in primary or higher education. Full-text access was required to ensure comprehensive analysis.

Articles were excluded if they exclusively discussed organizational or institutional level coping strategies, lacked peer-review status, or were not accessible in full text. Studies that did not provide a clear focus on teacher-specific coping mechanisms or addressed stress management from a general perspective without targeting education professionals were also omitted. Additionally, articles focusing exclusively on student-related coping mechanisms or interventions were excluded from this review.

4. Results and Discussion

Results

The following is an extensive search of academic articles using databases such as Google Scholar, Mendeley references, Publish and perish, and ERIC. A total of 222 articles published between 2015 and 2025 were identified and analyzed. The selection process utilized the SPIDER framework to refine the inclusion and exclusion criteria, focusing on educators in primary and higher education settings and their use of individual coping mechanisms for stress management. Articles addressing



organizational-level strategies or unrelated topics were excluded. The final table below represents the key studies that passed the selection process and highlights individual coping strategies and their applications, and implications in diverse educational contexts. These studies serve as a foundation for analyzing the effectiveness of coping mechanisms across different teaching levels.

Data Extraction of selected articles then summarized in table form consisting of the name of the researcher, year of publication, type research, research objectives, research sample, research design, coping measurement methods, finding of the study.

Table 1: Data extraction

Author Name	Year	Research Objective	Participants	Design and Methodology	Data Collection	Findings
Commey-Mintah, P., Awoniyi, F.C.	2022	Analyzing the impact of stress and coping mechanisms on preservice teachers in higher education.	Pre-service teachers in higher education	Mixed method study; survey and qualitative interviews	Quantitative surveys and in-depth interviews	Pre-service teachers utilize social support and planning as key coping mechanism.
Talahiban, M.J.L., Malabarbas, G.T.	2022	Exploring teaching competence and coping mechanisms of teachers in primary education during the "new normal".	Public primary school teachers	Mixed-method study; survey and qualitative interviews	Questionnaires and interviews with teachers	Teachers use competence development, peer support, and flexibility as coping strategies.
Zhao, X.	2022	Analyzing challenges of AI education in primary and secondary schools and teachers' coping mechanisms.	Primary and secondary school teachers	Descriptive study; survey and interviews	Questionnaires and interviews with teachers	Teachers face technological difficulties and apply self-training and collaboration as coping strategies.
Stan, R.	2022	Studying the relationship between Technology-based teaching skills, coping mechanisms, and teacher well-being.	Teachers in primary and secondary education	Quantitative study; survey and statistical analysis	Surveys on teacher well-being and coping mechanisms	Teachers with strong technological skills tend to be more adaptive and have higher well-being.
Saro, J., Cuasito, R., Doliguez, Z., Maglinte, F.	2022	Exploring coping mechanisms of teachers in primary and secondary education during the transition to the "new normal".	Primary and secondary school teachers in Agusan del Sur	Descriptive study; survey and interviews	Surveys and in-depth interviews	Teachers use collaboration and self-development to address "new normal" challenges.
Jiboc, A.M.	2022	Analyzing the importance of adaptive coping mechanisms in online teaching.	Online education teachers	Descriptive study; survey and interviews	Surveys on online teaching experiences	Adaptive coping mechanisms like schedule flexibility improve online teaching effectiveness.



Mendoza, E., Cimangala, L.C., Villagonzalo, A.	2023	Exploring teachers' coping mechanisms in modular learning during online education.	Online education teachers	Descriptive study; survey and interviews	Surveys on teachers' modular learning challenges	Teachers face major time management challenges and use planning as a coping strategy.
Hepburn, S.J., Carroll, A., McCuaig-Holcroft, L.	2021	Evaluating stress management strategies for novice teachers through specialized training.	Novice primary teachers	Experimental study; specialized training and evaluation surveys	Surveys before and after training	Training-based stress management strategies improve novice teacher wellbeing.
Ugwoke, S.C., Eseadi, C., Onuigbo, L.N., Aye, E.N.	2018	Evaluating REBT-based interventions to reduce burnout in special education teachers.	Special education teachers	Quasi-experimental study; evaluation before and after intervention	Burnout surveys before and after intervention	REBT interventions significantly reduce burnout and improve teacher wellbeing.
Fadare, A.O., Akinnubi, O.P.	2024	Analyzing stress management strategies to improve teacher productivity in secondary schools.	Secondary school teachers in Kwara State	Descriptive study; survey and interviews	Surveys on teachers' work stress experiences	Organization-based stress management strategies improve productivity and work balance.
Eddy, C.L., Herman, K.C., Reinke, W.M.	2024	Exploring stress management programs for special education teachers.	Special education teachers	Descriptive study; interviews and evaluation surveys	Surveys on stress management programs for special education teachers	Programs improve stress management skills and job satisfaction.
Tsang, H.W.H., Cheung, W.M., Chan, A.H.L.	2015	Evaluating CBT-based stress management programs and alternative therapies for primary school teachers.	Primary school teachers	Experimental study; trials of CBT and CAM programs	Data from pre- and post-program evaluations	CBT and CAM effectively reduce work stress and improve teacher wellbeing.
Pangan, S.D.	2023	Exploring work stress, coping skills, and their impact on teacher performance.	Secondary school teachers in the Philippines	Descriptive study; survey and interviews	Data on coping skills and teacher performance	Teachers with strong coping skills demonstrate more stable job performance.
Richard, M.O.	2024	Exploring the benefits of mindfulness programs for teacher stress management and wellbeing.	Teachers various education levels	Mixed-method study; survey and mindfulness program evaluation	Surveys on mindfulness program effectiveness	Mindfulness improves teachers' emotional well-being and productivity.



Paril, A.	2023	Analyzing stress levels and coping mechanisms of teachers as a basis for stress management programs.	Primary and secondary school mechanisms of teachers	Descriptive study; Data on teacher stress levels and coping strategies	Teachers and coping strategies to manage stress.	use social and individual strategies to manage stress.
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Table 1 shows that there were 15 articles met the inclusion criteria based on the SPIDER framework. This article was selected for its focus on individual teachers' coping mechanisms in primary and higher education contexts, ensuring the relevance and quality of the study. The selection process was carried out to ensure that only the most relevant studies were analyzed in this review.

Discussion

The findings from the reviewed studies highlight the critical role of individual coping mechanisms in addressing stress adjusted educators at different educational levels. This section synthesizes key insights from the data and provides a comparative analysis of coping strategies across primary and higher education contexts to address the research questions posed in this review. Across the studies, problem-focused coping strategies, such as planning, self-training, and time management, emerged as effective tools in reducing stress and enhancing productivity (Mendoza et al., 2023; Zhao, 2022). These strategies are particularly beneficial in managing task-related challenges, such as adapting to new technologies or balancing diverse responsibilities. Emotion-focused strategies, including mindfulness and cognitive-behavioral techniques, have also demonstrated their effectiveness in promoting psychological well-being. For instance, (Richard, 2024) and (Gueldner et al, 2020) highlighted that social and emotional learning programs significantly reduced stress levels adjusted teachers. These findings emphasize the importance of addressing emotional resilience alongside task management, as these strategies not only relieve immediate stress but also build long-term adaptability.

The stressors faced by primary and higher education teachers differ significantly, influencing the coping strategies employed. In primary education, stress is often linked to classroom management and meeting diverse student needs (Gueldner et al., 2020). Teachers in this context benefit from social support, collaboration, and professional development programs (Talahiban et al., 2022; Hepburn et al., 2021). These strategies foster a sense of community and shared responsibility, which is crucial for managing the complexities of primary education. The reliance on social support in primary education underscores the collective nature of coping within this teaching level. In contrast, higher education teachers often experience stress related to balancing teaching and research responsibilities and adapting to institutional demands (Thomas & Hammond, 2017). Studies by (Commey-Mintah et al., 2022) and (Jiboc, 2022) indicate that higher education teachers rely more on planning, self-training, and schedule flexibility to navigate their unique challenges. These findings highlight the need for interventions adjusted to the distinct stressors faced in higher education, such as research mentoring and workload management support. Cultural context plays a significant role in shaping coping behaviors. In collectivist cultures,



such as the Philippines and Nigeria, teachers often emphasize social support and collaboration as key coping strategies (Saro et al., 2021; Ugwoke et al., 2018). These approaches reflect cultural values of community and mutual assistance, which enhance the effectiveness of collaborative coping mechanisms. For example, teachers in collectivist settings reported higher psychological resilience when participating in group-based stress management programs (Saro et al., 2021). Equally, studies in more individualist settings, such as the United States and Australia, show a preference for individual-focused strategies like mindfulness and professional development (Richard, 2024; Eddy et al., 2024). These findings underscore the importance of culturally sensitive interventions that align with the values and norms of specific educational contexts. Incorporating both individual and collective strategies may provide a balanced approach, especially in multicultural environments.

The increasing reliance on technology in education has introduced new stressors, particularly for teachers unfamiliar with digital tools. (Zhao, 2022) and (Stan, 2022) demonstrated that self-training and collaboration are effective strategies for overcoming technological challenges. Teachers who actively engage in professional development related to technology report increased confidence and adaptability, as evidenced by studies like Saro et al. (2022) and Jiboc (2022). These strategies also address broader challenges of the digital divide, ensuring that teachers are better equipped to navigate modern educational demands.

Based on the synthesis of findings, effective coping mechanisms include a combination of problem-focused and emotion-focused strategies. Problem-focused approaches, such as planning and self-training, are universally effective for managing specific stressors like workload and technological adaptation (Mendoza et al., 2023; Zhao, 2022). These strategies are particularly significant in higher education contexts, where the stressors often revolve around balancing teaching, research, and administrative duties (Commey-Mintah et al., 2022; Jiboc, 2022). Emotion-focused strategies, such as mindfulness and social-emotional learning (SEL) programs, cater to psychological resilience, making them vital for teachers across all educational levels, especially in managing emotional exhaustion and fostering long-term well-being ((Richard, 2024; Gueldner, 2020)).

Differences between primary and higher education teachers underscore the importance of context-specific interventions. Primary educators rely heavily on social and community-based support systems to manage the immediate demands of diverse classrooms ((Talahiban et al., 2022, 2022; Saro et al., 2022)). By contrast, higher education teachers emphasize self-regulation techniques to maintain productivity in various roles. This distinction highlights the necessity of various strategies that align with the unique stress of the teachers.

The following table highlights the differences in individual coping mechanisms employed by teachers across primary and higher education levels.



Table 2: Comparison of Coping Mechanisms

Aspect	Primary Education	Higher Education
Main Sources of Stress	Classroom management, addressing diverse student needs.	Balancing research responsibilities, adapting to institutional policies.
Problem-Focused Coping Strategies	Collaboration with colleagues, professional training, time management.	Planning, self-training, self-schedule flexibility.
Emotion-Focused Coping Strategies	Social support, community cooperation.	Mindfulness, selfregulation.
Cultural Influence	Strong in collectivist cultures (e.g., the Philippines and Nigeria), emphasizing collaboration and mutual aid.	More independent in individualist cultures (e.g., the United States and Australia), focusing on individual agency.
Technological Challenges	Relying on collective support to understand and use new technologies.	Self-training and professional development in technology.
Effectiveness of Coping Strategies	Collective support enhances a sense of belonging, addressing management needs.	Planning-based strategies improve productivity and daily workload classroom
Recommended Interventions	Community-based professional development programs, fostering collaboration teachers.	Research mentoring, workload management training, and institutional adjusted policy support.

Addressing these findings provides actionable insights for policymakers, school administrators, and teacher training programs. It suggests that while general strategies such as professional development and SEL can assist all teachers, more variety programs are required to address the specific requirements for teachers based on their teaching context and stressors.

A notable gap in the reviewed literature lies in the underrepresentation of marginalized or under-resourced communities. Few studies, such as Saro et al. (2021), have explored the unique coping challenges faced by educators in these contexts. Addressing these populations through targeted research is essential to ensure equitable and inclusive interventions. Furthermore, cross-cultural comparative analyses remain scarce despite the cultural diversity of educational settings. While some studies, like (Richard, 2024), offer cultural insights, a comprehensive comparison of how cultural norms shape coping mechanisms across different regions would deepen the understanding of these strategies' effectiveness.



5. Conclusion

This literature review provides a comprehensive synthesis of individual coping mechanisms employed by educators across primary and higher education levels, addressing the unique stressors faced in each context. Problem-focused strategies, such as planning and time management, and emotion-focused approaches, like mindfulness and social-emotional learning, have proven effective in reducing stress and enhancing resilience. The differences in stressors and coping preferences between primary and higher education teachers underscore the need for targeted interventions that cater to their unique challenges. Furthermore, cultural influences are pivotal in shaping coping mechanisms. Educators in collectivist societies rely on community and collaboration, while those in individualist cultures prefer strategies emphasizing personal agency. This highlights the importance of designing culturally sensitive interventions to enhance their effectiveness. Additionally, the integration of technology presents both challenges and opportunities for educators. While digital tools can enhance teaching efficiency, they also introduce unique stressors, particularly for those with limited technological proficiency. This calls for robust professional development programs aimed at improving digital literacy and providing ongoing support to educators adapting to technology-driven teaching environments.

Ultimately, this review highlights that effective coping mechanisms must be both adjusted and contextually relevant. Educators in different teaching contexts and cultural settings require specific strategies that align with their unique needs and stress profiles. For primary education teachers, collaborative and community-based support systems can offer substantial benefits, while higher education teachers may find self-regulation techniques more effective.

Moreover, the findings underscore the importance of institutional support. Schools and universities have a crucial role in fostering environments that promote teacher well-being. Providing access to professional development programs, facilitating peer collaboration, and incorporating mental health support services are key steps toward empowering educators to manage stress effectively. These efforts not only enhance teacher well-being but also contribute to improved student outcomes, as teachers who are less stressed are better equipped to deliver high-quality education.

In conclusion, this review advances our understanding of how individualized and culturally responsive coping mechanisms can help educators navigate the complex challenges of their roles. By addressing gaps in the literature, such as the underrepresentation of marginalized groups and the limited exploration of long-term efficacy, future research can build on these insights to create more inclusive and effective interventions. As educators face an ever-changing era shaped by technological advancements and diverse educational demands, fostering resilience through adjusted coping strategies remains a critical priority for stakeholders in education.



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Literature Review: STEM Education and Islamic Values on Teacher Preparation in Biology

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Submitted: 31/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: STEM (Science, Technology, Engineering, and Mathematics) education plays a pivotal role in preparing educators to address 21st-century challenges, fostering interdisciplinary thinking and problem-solving skills. However, traditional STEM approaches often lack integration with ethical and cultural values, leaving a gap in holistic teacher preparation.

Methods: The study employs a narrative review methodology to explore the integration of Islamic value into STEM education. Employing the methodology, 14 peer reviewed articles published between 2018 to 2024 were analyzed to identify trends, challenges an effective strategy in the context of preparing prospective biology teachers.

Results: The finding highlight the transformative potential of embedding Islamic value in STEM education to foster well rounded-educators and students who are equipped to address both scientific and ethical dimensions of education.

Conclusions: Future directions for research and curriculum innovation are provided to expand the scope and impact of this integration.

Keywords:

STEM Education, Islamic values, literature review, prospective biology teachers.

1. Introduction

The increasing complexity of global challenges in the 21st century demands an educational paradigm that not only develops students' cognitive and technical skills but also their moral and ethical values. STEM (Science, Technology, Engineering, and Mathematics) education has emerged as a critical interdisciplinary approach to equipping students with the skills needed to address real-world issues such as climate change, biodiversity loss, Food insecurity, and rapid technological advancements (Stevenson et al., 2023; Gyasi, 2021). STEM education emphasizes critical thinking, problem-solving, collaboration, and digital literacy, skills that are vital for thriving in an ever evolving world (Stracke et al, 2019; Ping 2021).

However, traditional STEM education often overlooks the integration of moral and ethical considerations, focusing primarily on technical and cognitive outcomes (Chang & Chen, 2022). This gap in character education raises concern about holistic development of students and their ability to make ethical decisions in complex socio



scientific context. To address this limitation, there is a growing interest in integrating Islamic values into STEM education to provide a balanced framework that aligns with cultural and spiritual principles while promoting academic excellence (Listyono et al., 2018). Islamic values such as stewardship, honesty, responsibility, and cooperation not only enhance students' moral character but also contextualize their scientific knowledge within a broader ethical and spiritual framework (Purwati et al., 2018; Robiah et al., 2024). Research has shown that integrating religious and ethical teachings into STEM enhances students' motivation, engagement, and critical thinking abilities (Aisyah et al., 2020; Abas et al., 2023).

Despite its potential, the implementation of STEM education integrated with Islamic values faces significant barriers, including a lack of teacher training, limited interdisciplinary knowledge, and inadequate teaching resources (Utomo, 2016; Sungur, 2023). Additionally, existing research on this topic is often fragmented, with most studies focusing on primary and secondary education rather than higher education or teacher preparation programs (Husamah, 2023). These gaps underscore the need for a comprehensive review to synthesize existing findings and identify effective strategies for integrating Islamic values into STEM education for pre-service biology teachers.

This study aims to, 1) Explore the integration of Islamic values into STEM education in the context of teacher preparation for biology, 2) Highlight challenges and opportunities in implementing STEM education that aligns with Islamic principles, particularly for prospective biology teachers.

2. Literature Review

Introduction to STEM Education

STEM (Science, Technology, Engineering and Mathematics) is one of the most important themes that is intensively researched and practiced in science education today (Wang, 2012). STEM is education that integrates four disciplines of science, technology, engineering and mathematics into a cohesive and meaningful curriculum (Bybee, 2020). Breiner (2012) stated that STEM education is an effort to unite previously separate disciplines. STEM education can encourage project-based learning, where students are involved in solving problems that are relevant to the application of science, technology, engineering and mathematics in the real world. Furthermore, STEM education according to the National Research Council emphasizes the importance of integration to enrich students' learning experiences. The focus is on the teaching process that engages students in scientific practices, technological skill development, and systematic approaches to problem solving, with the aim of creating skills and knowledge that are relevant to industrial and technological developments (NRC, 2011).

STEM education refers to the integration of science, technology, engineering and mathematics disciplines. It emphasizes solving real-world problems through hands-on activities, designed to prepare students for the demands of a competitive and evolving future (Morrison, 2006; Wahono & Chang, 2019). Furthermore, according to Sanders, 2009, in STEM education, disciplines are not taught separately but are combined in one learning framework.



STEM is a curriculum based on the idea of educating students in four specific disciplines, namely science, technology, engineering design and mathematics through the application of an interdisciplinary approach. Rather than teaching the four disciplines as separate subjects, STEM tends to integrate the four disciplines into a cohesive learning paradigm to provide alternative solutions to problems that exist in the real world (the surrounding community).

STEM education is an approach that brings together science, technology, engineering, and mathematics into an integrated curriculum. This approach encourages students to think critically, solve problems, and apply their knowledge in a real-world context. Experts such as Bybee, Sanders, and Breiner agree that the main goal of STEM education is to prepare students to face the challenges of the 21st century by providing in-depth understanding and relevant practical skills in a global context and evolving technology. In the STEM approach, there is an integration of science, technology, engineering, and mathematics disciplines that aim to develop a deep understanding of the basic concepts of each discipline. In its implementation, students not only learn theory but also how to apply this knowledge in real life.

STEM education does not mean only practical strengthening of education in STEM fields separately, but rather developing an educational approach that integrates science, technology, engineering design, and mathematics, by focusing the educational process on solving real problems in everyday life and professional life. The following is a table that describes the components of STEM based on definitions, objectives, and examples of application.

Integration of STEM and Islamic Values

Integrating Islamic values into education ensures that students not only acquire technical competence but also develop moral character and spiritual awareness. This dual focus enhances students' ability to address contemporary challenges, such as climate change and genetic engineering, through an ethical lens (Purwati et al., 2018).

In the context of STEM education, Islamic principles offer a profound framework for fostering ethical scientific inquiry among prospective biology teachers. By integrating values such as stewardship, justice, and the pursuit of knowledge into the curriculum, educators can cultivate a holistic approach to science that emphasizes moral responsibility. For instance, the concept of stewardship encourages future scientists to engage in practices that protect biodiversity and promote ecological balance. Further, recent research highlights the significance of the nature of science (NOS) as socially and culturally embedded, a notion that aligns with Islamic teachings emphasizing the communal aspects of knowledge (Hodson et al., 2010).

STEM education has been widely acknowledged as a critical approach to equipping students with interdisciplinary skills that are essential for solving real-world problems. It emphasizes the integration of science, technology, engineering, and mathematics to foster innovation, critical thinking, and problem-solving abilities (Honey et al., 2014; Nadelson & Seifert, 2017). Despite its potential, traditional STEM education has been critiqued for focusing primarily on technical and cognitive outcomes, often neglecting moral, ethical, and cultural dimensions that are vital for holistic learning and societal impact (Barak, 2020; Chang & Chen, 2022).



Numerous studies have explored the integration of STEM education and Islamic values, focusing on the following key aspects, I-SETS Model (Islamic-Science, Environment, Technology, and Society), A framework that integrates Islamic principles into STEM by linking scientific concepts to ethical and environmental responsibilities (Aisyah et al., 2020). Q-STEM Model, Combines STEM with Quranic teachings to promote moral reasoning alongside scientific inquiry, particularly in topics like biodiversity and renewable energy (Hidayat, 2019; Noor et al., 2023). Project-Based Learning (PjBL) with Islamic Contexts Encourages students to work on real-world problems while reflecting on ethical and spiritual dimensions relevant to the projects (Listyono et al., 2018).

3. Methods

This study employs a narrative review methodology to synthesize existing research on the integration of Islamic values into STEM education, specifically in the context of teacher preparation for biology. The narrative review approach was chosen because it allows for an in-depth exploration of diverse sources, themes, and findings, providing a comprehensive understanding of the topic and addressing the research objectives effectively. Literature review involves finding, reading, understanding and forming conclusions about the published research and theory and presenting it in an organised manner (Brink & Rensburg 2012). The purpose of using a narrative literature review in this study was to provide an up-to-date account of what is already known about the integration of Islamic values into STEM education, specifically in the context of teacher preparation for biology. The three phases and nine steps of a narrative literature review were adopted to answer the review question (Juntunen & Lehenkari 2021). The phases include planning, conducting and reporting. Figure 1 depicts the phases and steps of a narrative literature review followed in this study:



Figure 1: Phases and Step of a narrative literature review
(Adapted from Juntunen & Lehenkari, 2021)

Explanation of each step. Step 1. *Selecting the topic* - The topic selected for this study is STEM education and Islamic value on prospective Biology teacher. Step 2. *Defining the objectives* and formulating the research questions – The objective of study was to explore integration of Islamic values into STEM education in the context of teacher preparation for biology. Step 3. *Search the literature* - purposive sampling techniques were used to select the online databases used Google Scholar and Science Direct. Step 4. *Selecting the literature* - to deciding which articles are included in the analysis or exclude from the analysis. Step 5. *Analysing* - This step includes reading and re-reading selected articles and making sense of them. Step 6. *Synthesising* - refers to organizing the grouped data into specific structure. Step 7. *Concluding* – the step includes of how the findings of this study extend the existing research, implications for the research. Recommendation was made for future research and methodological limitation of review. Step 9. *Reporting* – Structure of this literature review.



4. Results and Discussion

The findings from the search are given in figure 2.

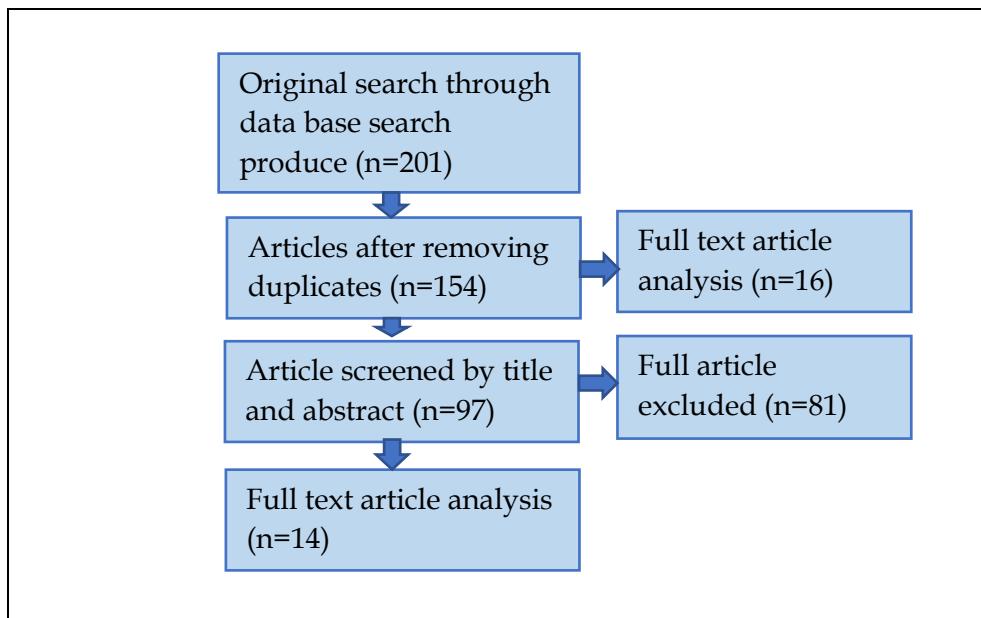


Figure 2: Flow chart search strategy

The following is a description of the literature study on table 1.

Table 1: Description Literature Study

Author(s)	Title	Research Objectives	Method	Finding
Listyono, (2024)	Exploration Of STEM And The Quran For Holistic Teaching And Learning Methods of integrating Islamic values in teaching biology for shaping attitude and character	The primary objective of this study is to explore how Science, Technology, Engineering, and Mathematics (STEM) can be combined with teachings from the Quran to create a well-rounded educational approach. This integration aims to blend modern scientific knowledge with spiritual wisdom, fostering a holistic learning experience for students	Mix Method	The research findings indicate that integrating STEM education with Quranic teachings fosters a holistic learning experience, enhancing students' understanding of both scientific concepts and ethical responsibilities
Ramli et al (2018)	Critical Thinking From STEM Education	The research paper aims to synthesize critical thinking from both Western and	Qualitative approach through literary study	The research findings indicate that integrating STEM education with the



	and Al-Qur'an Perspectives	Islamic perspectives, particularly through the lens of STEM education. It seeks to rationalize the connection between critical thinking as presented in the Al-Quran and Western perspectives, thereby preparing students with essential 21st-century skills.	type data collection through documentation method	teachings of the Al-Quran enhances critical thinking skills among students, preparing them for global competitiveness while maintaining spiritual values.
Aksan et al (2023)	Islamic Educational Thought on STEM (Science, Technology, Engineering, Mathematics) : Perspectives and Implementation	The research aims to explore a new paradigm in Islamic educational thought regarding the integration of STEM (Science, Technology, Engineering, and Mathematics) within Islamic education	qualitative research methodology, focusing on a systematic literature review to explore Islamic educational thought on STEM and its implementation	The study emphasizes the importance of developing a STEM curriculum aligned with Islamic ethical values and the need for teacher training programs.
Raisah et al (2023)	Implementation of STEM-Based Learning Modules Containing Islamic Values to Improve Student Learning Outcomes and Motivation.	The primary objective of the research is to determine the difference in the increase of student learning outcomes and motivation regarding respiratory system material after implementing a STEM-based learning module that incorporates Islamic values.	Experiment, nonequivalent control group design	The study suggests that there is a need for more effective teaching materials that integrate STEM approaches with religious values to enhance student motivation and learning outcomes. There is a lack of integration between science concepts and Islamic values in the teaching materials, which contributes to students' difficulties in understanding abstract science material.
Anas (2024)	Integrasi Nilai-Nilai Islam Dalam	The research aims to integrate Islamic values into the STEM (Science,	mixed-methods approach,	The research findings indicate that integrating Islamic



	Kurikulum Berbasis STEM Di Sekolah Islam Terpadu	Technology, Engineering, Mathematics) curriculum in integrated Islamic schools to foster holistic character and competencies among students.	combining qualitative and quantitative methodologies.	values into the STEM curriculum significantly enhances students' academic understanding and strengthens their moral and spiritual character
Wahono, & Chang, (2019)	Assessing Teacher's Attitude, Knowledge, and Application (AKA) on STEM: An Effort to Foster the Sustainable Development of STEM Education	The research objectives of the study are to determine the levels of attitude, knowledge, and application regarding STEM education among science teachers in Asian countries	mixed-methods study, combining both quantitative and qualitative approaches	The research findings indicate that science teachers in Indonesia exhibit a very good level of attitude towards STEM education, a moderate level in application, and a poor level in knowledge regarding STEM education.
Elbashir et al (2024)	Fostering STEM Learning: Exploring the Integration of Design Thinking in Islamic STEM Education	Investigate how incorporating Design Thinking in STEM education within an Islamic context affects students' STEM interest, subject knowledge, and design skills	This research used a quantitative method. Data collected used survey instrument	No significant differences in STEM Interest, Design Thinking skills, or Subject Knowledge between 7th and 8th-grade students, as indicated by the Mann-Whitney U Test results
Chang & Chen (2022)	Educational values and challenges of i-STEM project-based learning: A mixed-methods study with data-transformation design	The primary research objective of the study is to examine the educational values of i-STEM project-based learning (PjBL) as perceived by students, focusing on aspects such as learning acquisition, performance, and perception.	The study adopted a mixed-methods research approach	The study identified educational values of i-STEM project-based learning (PjBL) from students' perspectives, focusing on learning acquisition, performance, and perception. Students expressed interest in the materials and reported acquiring knowledge and skills across various fields, indicating positive learning experiences.



Akcan (2019)	Bibliometric analysis and content evaluation: relationship between STEM education and islam and other religions.	The research highlights several limitations affecting STEM education, including familial opposition rooted in traditional beliefs or religious practices, which can hinder students' pursuit of higher education. Geographic barriers, such as limited access to high schools on remote islands, impede educational opportunities for students.	Systematic Literature Study with bibliometric analysis	A total of 34 studies were selected for content analysis, including the 10 most cited and 10 most recent studies, along with 7 studies each related to Islam and to the intersection of STEM Education and religions in general. The content analysis method was applied to these studies, focusing on their aims and results
Sumarni et al., 2020	The Urgency of Religious and Cultural Science in STEM Education: A Meta data analysis	The paper aim to emphasize the critical role that religious and cultural sciences play in enhancing STEM education	Qualitative with literature synthesis	The paper discusses the importance of integrating religious and cultural sciences into STEM education. This integration is seen as crucial for providing students with a more balanced understanding of religion, ethnoscience and science
Diani et al (2020)	Islamic Literacy-Based Physics E-Module with STEM (Science, Technology, Engineering, and Mathematics) Approach	The primary objective of the research was to develop an Islamic literacy-based physics e-module utilizing a STEM approach.	Research an Development with ADDIE development Model	The research successfully developed an Islamic literacy-based physics e-module utilizing the ADDIE development model, which includes Analysis, Design, Development, Implementation, and Evaluation stages.
Yakob et al., (2022)	STEM Education Elements in Islamic Studies Syllabus in Malaysia	The first objective is to identify the STEM Education elements that inform the Islamic Education syllabus	The methodology employed in the study is a qualitative approach based on document analysis	The study reveals that discussions on scientific aspects related to ablution, prayer, and fasting are included in the curriculum, demonstrating the relevance of STEM in



Purwati (2020)	Integration of STEM Approach in Teaching Science to Indonesian Islamic Boarding School Students (Malaysian Pre-service Teachers' Experience)	The primary research objective is to evaluate the effectiveness of integrating the STEM approach in science learning within Islamic boarding schools, based on the experiences of pre-service teachers (PSTs) during their teaching practic	The research employed a qualitative methodology to explore the effectiveness of STEM integrated science learning	understanding these practices
Abdullah (2024)	Development of environmental sustainability handout based on STEM-PjBL Integrated Islamic Values	The primary objective of the research is to develop environmental sustainability handouts that integrate Science, Technology, Engineering, and Mathematics (STEM) with Project-Based Learning (PjBL) and Islamic values	research and development approach utilizing the Analysis, Design, Development, Implementation, and Evaluation (ADDIE)	The research findings indicate that the developed STEM-PjBL-based handouts integrated with Islamic values are feasible for use, receiving a validation score of 4.2, categorized as 'good'

Integration Islamic values into STEM education in the context of teacher preparation for biology

The integration of STEM education with Islamic values in teacher preparation programs has been explored in various studies, highlighting different models, methodologies, and impacts on educators and students. Based on the literature review and additional data about the primary objectives of implementing STEM education include, preparing future biology teachers to integrate Islamic ethical values with scientific concepts, ensuring a balanced understanding of technical knowledge and moral responsibility (Listyono et al., 2024). Emphasizing the role of critical thinking and ethical decision-making in STEM learning, aligning with Islamic teachings on stewardship (*khalifah*) and responsibility (*amanah*) (Ramli et al., 2018).

The studies analyzing the implementation of STEM education integrated with Islamic values in teacher preparation programs have adopted various research methods, with the data presented in the following graph 1:

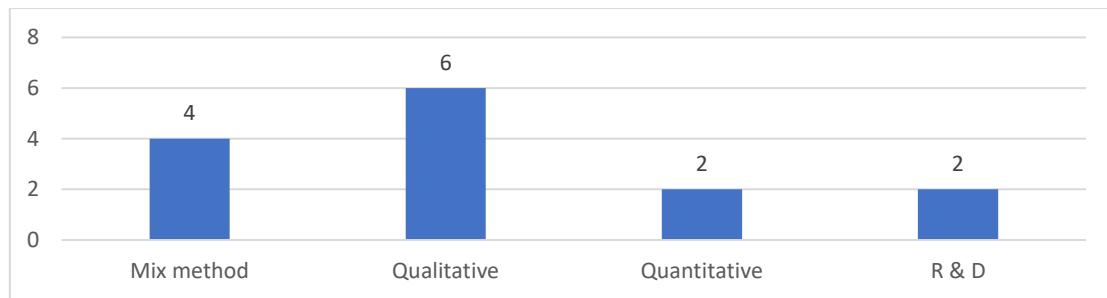


Figure 3: Distribution of research methods

Figure 3 shows the distribution of research methods across the 14 articles reviewed. There is qualitative research with systematic literature review and case studies. Studies have reviewed existing literature to explore how STEM education can be aligned with Islamic principles in teacher training programs (Aksan et al., 2023), content analysis of Quranic interpretations in STEM subjects to identify areas where Islamic values can be integrated into biology education (Listyono et al., 2024). In case study research, it has depth interviews with teachers and curriculum designers in Islamic integrated schools that have successfully implemented STEM education (Anas, 2024), analyzing how STEM topics are taught in alignment with Islamic ethical perspectives (Yakob et al., 2022).

Figure 3 also shows quantitative research including, studies investigate how incorporating design thinking in STEM education within an Islamic context affects students' STEM interest, subject knowledge, and design skills with Elbashir et al (2024). And STEM-Based Learning modules containing Islamic values to improve student learning outcomes and motivation (Raisah, et al., 2023).

Incorporating Islamic values in STEM teacher preparation involves various teaching strategies and instructional methods. Some teacher training programs have incorporated Islamic literacy-based e-modules for physics and biology education, allowing educators to align lesson content with Quranic perspectives (Diani et al., 2020). studies suggest that STEM-Based Learning Modules combined with Islamic ethical discussions enhances critical thinking skills among teacher candidates (Raisah et al., 2023). Integrated Islamic schools have developed STEM-based curricula that embed Islamic values into every subject, fostering both technical and moral competencies in teacher preparation programs (Anas, 2024). Some researchers have investigated the role of design thinking methodologies in STEM-Islamic education, highlighting its impact on students' interest, subject knowledge, and design skills (Elbashir et al., 2024).

Highlight challenges and opportunities in implementing STEM education

One of the major barriers to integrating Islamic values into STEM education is the absence of a standardized curriculum and insufficient instructional resources. Studies have indicated that most STEM curricula are designed which does not inherently incorporate religious or ethical dimensions (Yakob et al., 2022; Sumarni et al., 2020). The lack of culturally relevant materials hinders the ability of prospective teachers to implement STEM education in ways that align with Islamic teachings. Teacher preparation programs primarily focus on scientific content knowledge and



pedagogical skills but provide minimal emphasis on ethical, religious, and interdisciplinary teaching approaches (Wahono & Chang, 2019). Implementing STEM education aligned with Islamic values requires institutional support, but many educational policies remain focused on conventional STEM models. Some institutions resist integrating religious elements into STEM, citing concerns over maintaining scientific objectivity and academic neutrality (Chang & Chen, 2022).

5. Conclusion

The aim of this literature review was to explore the integration of Islamic values into STEM education in the context of teacher preparation for biology and highlight challenges and opportunities in implementing STEM education that aligns with Islamic principles, particularly for prospective biology teachers. These finding show This study has explored the implementation strategies, challenges, and opportunities associated with embedding Islamic principles into STEM-based teacher training programs.

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Teachers as Change Agents: Reflecting on Inclusive Classroom Challenges in Indonesia

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Submitted: 30/01/2025 | Revision Accepted: 31/01/2025 | Online: 08/08/2025

Abstract:

Purpose: This study examines the challenges associated with implementing inclusive education in Indonesia, with a particular emphasis on East Kalimantan. Despite the existence of a supportive legal framework, including the Indonesian Constitution and various educational regulations, teachers face substantial obstacles that hinder their ability to effectively accommodate the diverse needs of students with disabilities. These challenges include inadequate resources, insufficient training, and limited institutional support.

Methods: The research identifies key difficulties, such as managing diverse student behaviors, overcoming communication barriers, and addressing financial constraints. It highlights the pressing need for continuous professional development and sufficient funding to strengthen inclusive education practices.

Results: The study emphasizes the significance of both intrinsic and extrinsic motivation in fostering teachers' commitment to inclusivity. To address these challenges, the study advocates for well-integrated policies, enhanced teacher training, and increased community involvement to mitigate issues such as inadequate infrastructure and negative societal perceptions. However, the study's findings are limited to a specific regional context, which may not comprehensively represent the diverse educational landscapes across Indonesia.

Conclusions: Therefore, future research should explore broader educational settings to provide more comprehensive insights that can better inform policy and practice, ultimately improving the implementation of inclusive education nationwide.

Keywords:

Classroom Challenge; Inclusive education; Teacher; Indonesia.

1. Introduction

Inclusive education in Indonesia represents a transformative approach to ensuring that all students, regardless of their abilities or disabilities, have access to quality education. This paradigm shift emphasizes the value of diversity and promotes full participation for every learner. Inclusive education is defined as a commitment to providing equitable opportunities for students with disabilities, enabling them to thrive alongside their peers in mainstream settings (Fionita, 2024). Despite its promising potential, however, the implementation of inclusive education in Indonesia remains in its early stages, with significant barriers hindering progress.



Since 2003, inclusive education in Indonesia has experienced significant growth, with over 36,000 schools now offering inclusive practices for students with disabilities. This growth has been supported by a robust legal framework, which includes key policies such as the Indonesian Constitution (UUD 1945), guaranteeing equal rights for all individuals, including those with disabilities. Additionally, the Ministerial Regulation on Inclusive Education (2009) outlines specific guidelines for schools to implement inclusive education practices effectively. More recently, the Curriculum Decree (2022) has emphasized the need for flexible curricula to accommodate diverse learner needs, reinforcing the commitment to inclusivity in education. These legal frameworks collectively reflect the government's strong commitment to ensuring that students with disabilities can participate fully in mainstream education.

Despite these advances, challenges remain in the implementation of inclusive education. Many schools still face difficulties in adapting to inclusive practices due to insufficient resources, inadequate teacher training, and a lack of tailored curricula to meet the diverse needs of students with disabilities. Furthermore, educators in Indonesia often encounter challenges in applying evidence-based practices, such as differentiated instruction, because they lack the necessary training and resources to support students with varying learning needs (Fionita, 2024; Onwubiko, 2024). These gaps emphasize the need for ongoing professional development tailored specifically to the demands of inclusive classrooms.

Despite Indonesia's robust legal frameworks supporting inclusive education, such as the Ministerial Regulation on Inclusive Education (2009) and the Curriculum Decree (2022), the implementation of these policies continues to face significant challenges. Teachers, as the primary drivers of inclusive education, are often underprepared and under-resourced to meet the diverse needs of students with disabilities. A key issue is the lack of alignment between policy and practice. Many teachers report insufficient access to professional development, assistive technology, and specialized teaching materials necessary for inclusive classrooms. In resource-limited regions like East Kalimantan, these challenges are further amplified by inadequate infrastructure, large class sizes, and limited funding. These factors hinder teachers' ability to provide individualized support, resulting in inequitable learning opportunities for students with disabilities.

Compounding this issue is the lack of research exploring the lived experiences of teachers working in inclusive classrooms, particularly in Indonesia. Current studies often neglect the specific barriers faced by educators and their strategies for addressing them. Without this critical insight, it becomes difficult to design targeted interventions that address the real-world challenges teachers encounter. This research aims to bridge this gap by investigating the obstacles teachers face in supporting students with disabilities and identifying actionable solutions. By focusing on the voices of teachers, this study seeks to inform policymakers and educational stakeholders, ensuring that inclusive education policies translate into meaningful practices in classrooms.



2. Literature Review

Inclusive education in Indonesia represents a continuously evolving and dynamic concept (Purbani, 2013). This approach is underpinned by national and regional government policies, alongside legal frameworks that protect the rights of children with disabilities to access and participate in education (Villeneuve et al., 2016). A significant milestone in Indonesia's inclusive education framework was the issuance of Mayor City Regulation No. 48 in 2008, which designated public schools as Schools Providing Inclusive Education (SPIE). Initially, seven SPIEs were established in 2009, with this number steadily increasing in the following years. The Ministry of Education has defined specific criteria for inclusive schools. These include enrolling students with disabilities, employing special education teachers, adhering to compulsory education requirements, collaborating with related institutions, providing accessible facilities, fostering an inclusive culture within the school community, and fulfilling administrative obligations at the provincial level (Rasmitadila et al., 2018).

The designation of schools as SPIEs was intended to create an ideal framework for implementing inclusive education practices. However, in practice, this classification resulted in a divide between "inclusive schools" and "regular schools," which did not effectively promote inclusive processes, curricula, pedagogies, or broader acceptance (Andriana & Evans, 2020; Little et al., 2020). Additionally, this categorization exacerbated the stigmatization of SPIE schools, reinforced negative attitudes toward disability, and impeded the expansion of inclusive educational opportunities for students with disabilities (Notoprayitno & Jalil, 2019; Villeneuve et al., 2016).

Barriers to inclusive education in Indonesia arise from various factors, including policies, societal attitudes, and prevailing beliefs. Studies on teachers' perceptions of inclusive education, particularly for students with intellectual disabilities in mainstream schools, highlight a belief that, while all teachers are capable of teaching students with disabilities, specialized training is crucial (Sheehy et al., 2019). Despite this, many teachers favor segregating students with disabilities from their non-disabled peers, advocating for placement in special schools or separate classrooms based on perceived intelligence or "ability." This perspective reflects an adherence to a standardized pedagogy tailored for intellectually uniform groups, prioritizing quiet classrooms and students of comparable intellectual capacities. As a result, students with intellectual disabilities are frequently excluded from mainstream environments, placed in inclusion rooms (Andriana, 2018) or special schools (Sheehy et al., 2019), and, in some cases, entirely denied access to education (Widagdo, 2016).

In Indonesia's efforts to fulfill its obligations under the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2006), ratified in 2011, insufficient focus has been directed toward transitional processes in educational settings. Students with intellectual disabilities in Indonesia encounter distinct challenges, such as grade repetition, strict minimum passing grade requirements, and exclusion from mainstream schools. These difficulties, while less prevalent in Western educational systems, are often characteristic of developing countries' educational landscapes.

In this study, teaching approaches and strategies are defined as carefully designed plans or programs developed by educators to improve the teaching and learning process (Anderson, 1981; Florian, 2009). Research suggests that adopting a



combination of teaching strategies, rather than relying solely on a single approach, is often more effective (Speece & Keogh, 1996; Davis & Florian, 2004). The following key strategies, approaches, and practices are recognized as beneficial for fostering inclusive education: (1) differentiation, (2) collaborative learning, and (3) inclusive classroom management techniques (National Council for Special Education [NCSE], 2010; Flem, Moen, & Gudmundsdottir, 2004; Lindsay, 2007).

Differentiation refers to the deliberate efforts of teachers to adjust and modify learning content, products, and processes to meet the diverse needs of students. While differentiating content and products is relatively straightforward, adapting learning processes requires changes to variables such as intensity, duration, and assignment formats, tailored to students' individual profiles and learning needs (Choate, 2000). The effectiveness of differentiation depends on factors such as the specific needs of the students, teachers' expertise, available resources, and their willingness to implement changes. This approach may include adapting lesson delivery methods (e.g., group or individual activities), adjusting assignment lengths, consulting with students about their preferred learning styles, varying teaching strategies, modifying instructional formats, and providing additional time to complete tasks.

Collaborative learning strategies focus on students working together in small groups to promote mutual learning and academic growth (Johnson, Johnson, & Holubec, 2013). These strategies can encompass a wide range of activities, from informal peer collaboration to structured tutoring sessions, and may be applied for brief periods or integrated throughout the school year, depending on the intended learning goals. Furthermore, effective learning in inclusive classrooms relies on well-established and supportive classroom management routines and structures (Wong & Wong, 2014). Teachers can create a positive and productive learning environment by diversifying group compositions for various activities, providing consistent feedback, regulating praise, monitoring progress closely, and adjusting seating arrangements as necessary to accommodate students' needs.

Theoretical Framework

Social norms significantly influence the development of inclusive practices within educational systems by shaping the expectations and behaviors of individuals and institutions. These norms, which are the shared expectations and rules that guide behavior within a society, play a crucial role in the institutionalization of educational practices. Institutionalization refers to the process by which certain practices become established and accepted as the norm within a society, and it is deeply intertwined with social constructionism. Social constructionism is a theory suggesting that our understanding of reality is constructed through social interactions and communication (Berger & Luckmann, 1966).

In the context of education, this means that the norms and practices that define inclusion are not inherent or fixed but are shaped by the interactions and communications between various stakeholders, including policymakers, educators, and students. Communication is a key mechanism through which social norms are established and maintained, influencing how inclusion and exclusion are defined within educational systems (Cornelissen et al., 2015). For example, the language used in policy documents, classroom discussions, and educational materials can reinforce



certain norms and expectations about who belongs in a classroom and who does not. This process of communication and interaction helps to construct the systems and structures that determine inclusion and exclusion.

Modern educational systems are often complex and differentiated, which can lead to the development of both inclusive and exclusive practices (Luhmann & Rasch, 2002). This complexity arises from the need to coordinate various elements within the system, such as curricula, teaching methods, and assessment practices. Schools often engage in development projects aimed at establishing common strategies and practices, which can help to standardize and rationalize the organization. However, this differentiation can also result in conflicting pressures on teachers and schools, as they must balance the demands of standardized assessments with the need to accommodate diverse learners (Florian, 2009). Social norms influence the development of inclusive practices by shaping the expectations and behaviors of individuals within the educational system. These norms guide institutionalized communication and practices, affecting how inclusion is implemented and perceived in schools. For instance, the expectation that all students should be able to pass standardized exams can create pressure on teachers to focus on certain types of learning and assessment, potentially excluding students who do not fit this mold. The habitual nature of human activity means that repeated actions become patterns perceived as definitive, further embedding these norms into educational practices (Berger & Luckmann, 1966). Once certain practices become institutionalized, they are often taken for granted and seen as the "way things are done." This can make it difficult to challenge or change these practices, even when they may not be inclusive or equitable.

The educational system is governed by various types of policies and controls that focus on inclusion in education. However, these formal structures are often loosely coupled, meaning that they are not always tightly linked to the actual activities and rules within schools (Hawkins & James, 2018). This can result in a disconnect between the formal policies that promote inclusion and the everyday practices that may not fully align with these policies. Social constructionism provides a useful framework for understanding how inclusive practices are developed and institutionalized within educational systems. By recognizing that our understanding of inclusion is socially constructed, we can begin to see how these practices are shaped by the interactions and communications between various stakeholders. This perspective highlights the importance of examining the social and cultural contexts in which educational practices are developed and implemented.

In conclusion, social norms play a significant role in shaping the development of inclusive practices within educational systems. Through the processes of institutionalization and social constructionism, these norms influence how inclusion is defined, implemented, and perceived. Communication is a key mechanism through which these norms are established and maintained, shaping the systems and structures that determine inclusion and exclusion. The complexity and differentiation within educational systems can lead to both inclusive and exclusive practices, influenced by the expectations and behaviors of individuals within the system. By understanding the role of social norms and the processes of institutionalization and social constructionism, we can better understand how to develop and implement



more inclusive practices in education. This analysis underscores the importance of examining the social and cultural contexts in which educational practices are developed and implemented. By recognizing that our understanding of inclusion is socially constructed, we can begin to see how these practices are shaped by the interactions and communications between various stakeholders. This perspective highlights the need for ongoing reflection and dialogue to ensure that educational practices are truly inclusive and equitable for all students.

3. Methods

Design

This research is descriptive qualitative research. The study aims to understand the challenges by teachers in responding to the needs of children with special needs at school. The participants in this study will include teachers who teach in inclusive classrooms, students with special educational needs (SEN). Teachers will be selected based on their experience in inclusive education or their willingness to adopt reflective practices as part of their teaching. To ensure a comprehensive understanding, the study will select participants from schools with existing inclusive programs, representing a mix of public and private institutions East Kalimantan, Indonesia.

Data collecting method

The data for this study were collected through in-depth individual interviews. A semi-structured interview format was chosen to provide flexibility in exploring participants' experiences. The interview guide was developed based on insights from the literature review regarding inclusive teaching practices. Consequently, the questions addressed challenges in supporting inclusive students, such as specific difficulties in assisting students with disabilities, and how these challenges affect teaching effectiveness and student learning. Each participant was interviewed individually for approximately 20-30 minutes. To reduce anxiety and facilitate a more detailed and comfortable expression of thoughts, the interviews were conducted in Indonesian, allowing participants to discuss their experiences in their native language (Utami & Prestridge, 2018).

The interviews were recorded using a mobile phone recorder application. To ensure the accuracy and trustworthiness of the data, the transcriptions were sent to all participants for validation (Utami & Prestridge, 2018). The participants' responses were analyzed qualitatively using thematic analysis (TA). Thematic analysis is a method used to systematically identify, organize, and interpret patterns of meaning within the data (Braun & Clarke, 2012). The steps involved in conducting thematic analysis include: (1) familiarizing oneself with the data and developing an understanding of it; (2) performing initial coding; (3) searching for themes; (4) reviewing potential themes; (5) defining and naming the themes; and (6) producing the final report (Braun & Clarke, 2012).

4. Results and Discussion

The findings were summarized, and the participants' experiences were highlighted to address the research question, analyzed, and narratively described. The following table summarizes the analysis:



Table 1: The summary of the data analysis

Theme	Categories	Sample excerpts
Challenges in supporting students	Managing Diverse Behaviors	"In my classroom, I often have to stop the lesson to address calm a child down, and it's challenging to balance this while keeping the rest of the class engaged."
	Communication Barriers	"One of my students has difficulty expressing their feelings verbally, which sometimes leads to frustration and aggressive behavior. Without proper tools or strategies to communicate, these situations can escalate quickly."
Challenges in lack of resources	Teaching Materials	"The textbooks we use are not adapted for students with learning disabilities. I spend hours trying to simplify the content or create alternative assignments."
	Assistive Technology	"There's no funding to provide tablets or laptops with accessibility features. Students with disabilities end up sharing limited resources, which disrupts their learning."
	Budget Constraints	"The school budget is very limited, so we can't buy specialized equipment or hire additional staff. We're constantly improvising, but it's not enough to meet the needs of all our students."

Challenges in supporting students

Inclusive classrooms often require teachers to manage a wide spectrum of student needs, including addressing diverse behaviors and overcoming communication barriers. Students with disabilities may exhibit behavioral challenges due to their unique needs or difficulties in adjusting to the classroom environment, which can disrupt the learning process if not effectively managed. Additionally, communication barriers, such as limited verbal skills, reliance on sign language, or the need for alternative communication tools, often pose significant challenges for teachers in fostering meaningful interactions and understanding. These dual challenges require teachers to employ a combination of patience, creativity, and tailored strategies to ensure every student feels supported and engaged. Understanding how teachers navigate these complexities can provide valuable insights into the realities of inclusive education and highlight areas where targeted support is needed.

"In my classroom, I often have to stop the lesson to address calm a child down, and it's challenging to balance this while keeping the rest of the class engaged."
(Teacher 3)



Teacher 3's reflection highlights the challenge of balancing individual and group needs in an inclusive classroom. Pausing a lesson to calm a child can disrupt the instructional flow, impacting both the teacher's ability to teach and the class's engagement. This reveals the need for professional development in behavior management and additional support, such as teaching assistants, to minimize disruptions. It also points to the emotional toll on teachers, who often feel torn between meeting individual needs and maintaining class progress. Addressing these challenges is essential to fostering an inclusive and supportive learning environment.

"One of my students has difficulty expressing their feelings verbally, which sometimes leads to frustration and aggressive behavior. Without proper tools or strategies to communicate, these situations can escalate quickly." (Teacher 7)

Teacher 7 highlights a common challenge in inclusive classrooms: the interplay between communication barriers and behavioral difficulties. When students struggle to express their emotions verbally, they may experience frustration, which can manifest as aggressive behavior. This underscores the importance of equipping teachers with specialized training and resources, such as alternative communication tools and behavioral management techniques, to help students navigate their emotions in a constructive way. By addressing these gaps, schools can create a more supportive environment for both students and teachers in inclusive settings.

Challenges in lack of resources

The success of inclusive education heavily depends on the availability of adequate resources to support both teachers and students in navigating diverse learning needs. However, many schools in Indonesia, particularly in under-resourced areas like East Kalimantan, face significant challenges in this regard. Limited access to assistive technology, insufficient teaching materials, and inadequate infrastructure often leave teachers struggling to implement inclusive practices effectively.

"The textbooks we use are not adapted for students with learning disabilities. I spend hours trying to simplify the content or create alternative assignments." (Teacher 4)

Teacher 4's statement highlights a significant challenge in inclusive education: the lack of adapted learning materials for students with disabilities. The reliance on standard textbooks that are not designed to accommodate diverse learning needs places an additional burden on teachers. This insight points to the urgent need for inclusive educational resources that are pre-designed to support diverse learners, thereby easing the pressure on teachers and ensuring equitable learning opportunities for all students.

"There's no funding to provide tablets or laptops with accessibility features. Students with disabilities end up sharing limited resources, which disrupts their learning." (Teacher 9)



Teacher 9 highlights tablets and laptops can serve as powerful tools to support students with disabilities, offering features like text-to-speech, screen readers, and other assistive technologies that enable equitable access to learning. However, the absence of these resources forces students to share limited tools, which not only disrupts their learning but also hinders their ability to fully participate in classroom activities. Teacher 9's perspective underscores the need for policymakers and education stakeholders to prioritize funding for technology that bridges these gaps and ensures all students can thrive in inclusive settings.

"The school budget is very limited, so we can't buy specialized equipment or hire additional staff. We're constantly improvising, but it's not enough to meet the needs of all our students." (Teacher 1)

Teacher 1's statement highlights a critical challenge faced by many educators in inclusive classrooms: the limitation of school budgets. As a result, teachers are often left to improvise solutions, relying on their creativity and resourcefulness to meet student needs. However, this approach is rarely sufficient, as it places an additional burden on teachers and may compromise the quality of education provided to students with disabilities. The lack of resources not only hinders the implementation of inclusive practices but also exacerbates inequalities in the classroom, making it challenging for teachers to provide equitable opportunities for all learners. This underscores the urgent need for increased funding and resource allocation to support inclusive education effectively.

Discussion

In comparing the results of various studies on the role of teachers as change agents in inclusive classrooms in Indonesia, several key themes emerge that highlight challenges faced by educators in this context. Teachers are recognized as pivotal figures in fostering inclusive environments, akin to conductors managing diverse student characteristics. This role requires them to innovate and utilize learning communities to enhance their professional development, a need echoed in studies that emphasize the importance of continuous learning and adaptation (Sari et al., 2023; Forlin, 2013).

However, teachers face significant challenges, particularly in social and pedagogical aspects. These include communication with students with disabilities and understanding their diverse needs, which are critical for creating an inclusive classroom environment (Opoku et al., 2017; Baguisa & Ang-Manaig, 2013). Similar challenges are noted in other studies, which stress the importance of social and pedagogic competence for teachers to adapt to classroom complexities. This is particularly relevant in Indonesia, where the diversity of student needs can be vast, and the resources to address these needs are often limited (Opoku et al., 2017).

Teacher readiness and competence are critical factors in the success of inclusive education. Studies indicate shortcomings in general teacher competence in conveying the learning process in inclusive settings, highlighting a gap that needs to be addressed through targeted professional development (Amalia & Kurniawati, 2021). This is consistent with findings from other regions, where the need for professional



development is high even among teachers who do not teach students with special needs, suggesting a broader systemic issue in teacher preparation (Malak, 2013).

Furthermore, teachers implement a range of strategies to navigate the challenges of inclusive classrooms, including communication techniques and psychological approaches. These strategies play a vital role in addressing both social and pedagogical challenges, demonstrating a widely adopted approach among Indonesian educators (Opoku et al., 2017). Effective communication strategies, such as the use of visual aids, simplified language, and assistive technology, help bridge gaps between teachers and students with diverse needs. Additionally, psychological approaches, such as fostering a supportive classroom environment, promoting peer collaboration, and using positive reinforcement, contribute to students' emotional and academic well-being.

The need for professional development is particularly evident in schools facing a shortage of teachers with specialized training in special education. In such contexts, educators often feel compelled or are encouraged to engage in professional development programs to enhance their ability to support students with disabilities (Opoku et al., 2017). Providing ongoing training opportunities in inclusive teaching methodologies, differentiated instruction, and behavioral management is essential to equipping teachers with the necessary skills to create an inclusive learning environment. Moreover, institutional support, such as mentorship programs and collaboration with special education professionals, can further strengthen teachers' capacity to effectively implement inclusive practices.

Overall, while teachers in Indonesia are recognized as change agents in inclusive education, they face significant challenges that require targeted interventions and support. These challenges, including a lack of resources, insufficient training, and limited institutional backing, hinder their ability to effectively accommodate the diverse needs of students with disabilities. Without adequate support, teachers may struggle to implement inclusive pedagogical strategies, leading to disparities in educational experiences and outcomes for students with special needs.

The alignment of findings across different studies highlights the universal nature of these challenges and the importance of collaborative efforts to enhance inclusive education practices. Addressing these issues requires a multifaceted approach that goes beyond isolated training sessions and instead fosters a continuous professional development model. Such a model should include mentorship programs, peer collaboration, and access to evidence-based teaching strategies to help teachers develop confidence and expertise in inclusive education. Additionally, institutional reforms should focus on reducing bureaucratic barriers that often limit teachers' access to necessary resources and support systems.

This includes not only providing professional development opportunities but also ensuring that these opportunities are meaningful and tailored to the specific needs of teachers and their students (Sari et al., 2023; Amalia & Kurniawati, 2021). Professional development programs should incorporate practical training, such as classroom simulations, case studies, and real-world problem-solving scenarios, to equip teachers with hands-on experience in managing diverse classrooms. Moreover, collaboration between policymakers, educators, and communities is essential in shaping a more inclusive education system. Schools must be encouraged to establish partnerships



with disability organizations, universities, and other stakeholders to create a more comprehensive support network.

Ultimately, fostering an inclusive education system requires a sustained commitment from all levels of society. By addressing the persistent challenges faced by teachers, refining professional development programs, and ensuring the availability of resources, Indonesia can move toward a more effective and equitable education system that truly embraces diversity and inclusivity.

5. Conclusion

The research concludes that while Indonesia has a legal framework supporting inclusive education, significant challenges hinder its effective implementation, particularly in East Kalimantan. Teachers face obstacles such as a lack of resources, insufficient training, and inadequate support, which impede their ability to address the diverse needs of students with disabilities. The study underscores the necessity of ongoing professional development and sufficient funding to improve inclusive education practices. It also highlights the importance of both intrinsic and extrinsic motivations in fostering teachers' commitment to inclusivity. To advance inclusive education, the paper suggests the need for coherent policies, enhanced teacher training, and greater community involvement.

However, the study is limited by its focus on a specific region, which may not fully capture the diverse educational contexts across Indonesia. Future research should aim to provide broader insights across various educational settings, including larger samples and diverse contexts, to better inform policy and practice, ultimately aiming to improve the implementation of inclusive education in Indonesia.

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The Role of Technology in Preserving and Developing Waqf Pesantren in Nusantara

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Submitted: 01/02/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This research highlights the role of technology in preserving and developing waqf Islamic boarding schools in Indonesia. Waqf Islamic boarding schools are Islamic educational institutions that have an important role in producing a generation of moral and knowledgeable people in the Nusantara. As a waqf-based institution, pesantren faces challenges in maintaining sustainability and improving the quality of education in the midst of the times.

Methods: The method used in this study is a qualitative method with a library research approach.

Results: Technology has a significant impact on improving the quality of education, management efficiency, and transparency in the management of waqf assets in Islamic boarding schools. Technology allows access to a wider range of educational resources, the application of flexible learning methods, and management information systems that support more transparent and accountable financial recording and reporting. However, the application of technology in waqf pesantren still faces challenges, such as limited infrastructure, lack of technical knowledge, and limited funding. Therefore, the development of a blockchain-based system or a secure and transparent digital platform is needed to increase public trust in the management of waqf funds.

Conclusions: This study shows that technology has great potential in improving operational efficiency, quality of education, and sustainability of waqf management in Islamic boarding schools.

Keywords:

Technology, Waqf Islamic Boarding School, Education Management, Waqf Management, Digital Innovation.

1. Introduction

Islamic boarding schools are one of the Islamic educational institutions that provide religious education to students, playing a strategic role in education and character development. Islamic boarding schools are one of the Islamic educational institutions that provide religious education to students, playing a strategic role in education and character development (Oktaria et al., 2023). Waqf Islamic Boarding Schools, which were established using waqf funds as the main source of financing, have their own uniqueness in their educational structure, because they are oriented towards the sustainability and welfare of the people (Mubarok, 2020; Arroisi, 2020; Masyhadi, 2024). In its development, pesantren not only focuses on teaching religious science, but also plays a role in building the moral and social of the community (Susilo et al., 2021; Ubaidillah et al., 2025). However, to maintain the relevance and competitiveness of



Islamic boarding schools in the modern era, efforts are needed to adapt to technological developments.

The role of technology in the world of education has been proven to have a significant impact, starting from the efficiency of a reliable waqf management system (Amarudin et al., 2024) to the delivery of more interactive materials and interesting learning modules (Muchasan et al., 2024). In waqf pesantren, technology can be an effective tool to preserve the tradition of Islamic education, as well as develop the potential of the pesantren itself (Sahila et al., 2024). However, the integration of technology in waqf Islamic boarding schools is also inseparable from challenges, such as limited infrastructure, low levels of digital literacy among pesantren managers, and uneven internet access throughout the region.

The great potential offered by technology, it is important for waqf pesantren to take advantage of digital advancements as a means of developing more effective and efficient education. Waqf Islamic boarding schools can be an educational center that is adaptive to the changing times, while maintaining and preserving Islamic values that have existed for centuries. In integrating technology in the rapids, it is necessary to pay attention to the traditions that already exist, so that these institutions remain relevant in the digital era without sacrificing their core values/Islamic Boarding Schools (Happyana & Istiqomah, 2025).

This research will identify the main challenges in the adoption of technology in Islamic boarding schools, such as the readiness of human resources, infrastructure, and wakif/community support. In addition, this study will use a literature study approach to analyze various literature, previous research, and policies related to the implementation of technology in waqf Islamic boarding schools. This approach will help map the roles and challenges that exist for the implementation of technology both in education, management, and waqf management to preserve and develop waqf Islamic Boarding Schools in Nusantara.

Pesantren as a traditional Islamic educational institution has played an important role in the development of social, cultural, and religious life in Indonesia. In addition to functioning as a place to explore religion, pesantren is also a place to build noble national character and values. With a distinctive education system and based on religious values, pesantren play an irreplaceable role in the formation of morals and religion (Syamsuri et al., 2023).

However, the development of Islamic boarding schools has faced increasingly complex challenges. Various factors such as the imbalance of technology infrastructure between institutions, many educators are not skilled or confident in using technology that hinders the effectiveness of learning, lack of policy support and financial resources can hinder investment in necessary technology devices (Ubaidillah et al., 2025).

Waqf is one of the instruments that has great potential to finance Islamic boarding schools, both for infrastructure development, educational facilities, and the operational management of the Islamic boarding school itself (Hudaya & Y Timorita, 2018; Mudyadji, 2022; Rachmawati & Mumin, 2017) However, many Islamic boarding schools are still experiencing difficulties in optimizing the potential of the waqf they have, both in terms of managing waqf funds, utilizing waqf assets, and in developing Islamic boarding schools as quality educational institutions that are relevant to the



needs of the times (Adainuri et al., 2024; Dharmarianti et al., 2024; Zulkurnain, Muslihun, 2021). One of the biggest challenges is the use of technology and information systems is also a challenge for Islamic boarding schools (Syamsuri et al., 2023). This hinders pesantren from taking advantage of the various opportunities offered by technology to develop the quality of education, improve management, and preserve their waqf assets.

In the midst of this challenge, technology is present as one of the potential solutions that can be used to strengthen and expand the role of Islamic boarding schools, especially waqf Islamic boarding schools, in the context of modernization. Technology can help Islamic boarding schools in various aspects, such as in administrative management, learning systems, communication, and the management of waqf assets in a more transparent and efficient manner (Sahila et al., 2024). Thus, technology can be a tool that accelerates the process of updating and developing Islamic boarding schools, as well as a means to preserve waqf Islamic boarding schools so that they remain relevant to the times.

In the context of waqf pesantren, technology can play an important role in improving the management of waqf assets (Ningtias & Nadya, 2022). Waqf assets owned by pesantren are often not managed properly due to the lack of a structured and transparent management system. Technology can help pesantren in managing waqf assets more professionally through a digital platform that allows for more accurate and transparent supervision and reporting (Masyhadi, 2024). Technology can also facilitate the marketing of waqf products or pesantren business results that can be used as an additional source of income. Thus, technology not only helps in the management of Islamic boarding schools, but also in increasing the economic potential of waqf Islamic boarding schools (Ardiansyah et al., 2016; Oktaria et al., 2023).

Along with the increasing attention to Islamic boarding schools and waqf in Indonesia, both from the government, the community, and philanthropic institutions, this research aims to explore and understand more deeply the role of technology in preserving and developing waqf Islamic boarding schools in the Nusantara. This research will also try to identify the challenges and roles that exist in the application of technology in waqf boarding schools, as well as provide recommendations on how technology can be optimized to improve the quality and sustainability of waqf boarding schools in Indonesia.

Thus, this research is expected to make a positive contribution in introducing and optimizing the use of technology as a tool to preserve and develop waqf Islamic boarding schools in Indonesia. A well-managed and technology-based waqf pesantren will become a stronger, sustainable, and able educational institution to adapt to the times, so that it can continue to make a great contribution to the formation of an intelligent, noble, and competitive society at the global level.

According to (KBBI) Pesantren are dormitories where students or students learn to recite and so on; Pondok. This definition emphasizes that pesantren is a place of residence for students who study Islamic religion, especially reciting the Qur'an and other Islamic books. In this context, pesantren is not only an educational institution, but also an environment that shapes the character and religious habits of students.



Meanwhile, according to (Dhofier, 1982) In his book Pesantren Tradition, pesantren is an Islamic educational and broadcasting institution. This understanding shows that pesantren has two main functions, namely:

- a) Educational Institutions – Islamic boarding schools play a role in educating students with religious knowledge, such as tafsir, hadith, fiqh, Sufism, and instrumental science (nahwu and sharaf). In addition, some modern Islamic boarding schools also teach general knowledge as a provision for life.
- b) Islamic Religious Broadcasting – Islamic boarding schools are not only a place of learning, but also a center for Islamic da'wah. Students who have completed their education often return to the community to teach religious knowledge and establish new Islamic boarding schools, so that Islamic boarding schools become an important part of the spread of Islam in Indonesia.

From these two definitions, it can be concluded that pesantren is an Islamic educational institution that not only teaches religious knowledge but also shapes the personality of students so that they become individuals with noble character and are able to contribute to the spread of Islamic teachings.

In modern times, Islamic boarding schools according to (Amarudin et al., 2024) is an Islamic educational institution that plays an important role in the spiritual movement of the people by empowering their image through creative and innovative ways. However, with the development of the times, there are several Islamic boarding schools that have developed their system from the traditional education system to the modern education system (Zarkasyi, 2017). On the other hand, the transition of pesantren from the traditional education system to the modern education system requires careful management to ensure that the core values and teachings of the pesantren are maintained while adapting to the changing needs of students and society (Syamsuri et al., 2023).

As explained above, the change in the education system in Islamic boarding schools from traditional to modern reflects efforts to adapt to social dynamics and technological developments. In the traditional system, pesantren focuses more on education based on the yellow book with a teaching method that takes place directly between kiai and students in a simple environment. However, with the increasing demand for more comprehensive education, many Islamic boarding schools have begun to adopt a modern education system that integrates the national curriculum, the use of technology in learning, as well as a more professional management approach. This change allows pesantren to not only produce students who understand religious science, but also have academic skills and expertise that are relevant to the needs of the times.

However, this transition is not without its challenges. One of the biggest challenges is how Islamic boarding schools can balance modernization while maintaining their core values and characteristics as Islamic educational institutions. The management of the pesantren must ensure that the innovations implemented do not eliminate the essence of pesantren education based on Islamic values, independence, and moral formation. Therefore, a careful management strategy is needed to manage this change, including through training for educators, the use of technology in accordance with Islamic principles, and support from various parties such as the government, academics, and the community. With the right approach, pesantren can develop into



an educational institution that adheres to tradition, but is also ready to face the challenges of modern times.

The word "waqf" in Indonesian comes from the Arabic word al-waqf, which means to hold or stop. Another word that is often used synonymously with waqf is al-hubus (plural alahbas), which means something that is withheld or stopped, meaning that it is detained in its principal and the results are used in the way of Allah. The word "waqf" in Islamic law has two meanings: The meaning of the verb, which is the act of waqf, and the meaning of the noun, which is the object of the act of waqf (Syamsul Anwar, 2019).

Waqf in the context of Islam, is the voluntary giving of property or assets by a person for a purpose that benefits the community (Ilmiah, 2019; Putra & Ramadhan, 2022). Waqf has long been a supporter of the development of Islamic boarding schools, both in the development and economic development of the Islamic boarding schools themselves (Himam & Umam, 2018; Nisa & Edi, 2023; Mudyadji, 2022). In research (Pedro et al., 2019) stated that waqf has a very strategic role in supporting the sustainability of Islamic education in Indonesia, because it allows pesantren to obtain waqf resources that can be used properly through good management.

This explains that waqf in Islam has a fundamental role in supporting various aspects of social life, especially in the field of education. In the context of Islamic boarding schools, waqf has long been the main source in infrastructure development, the provision of learning facilities, and the fulfillment of Islamic boarding school operational needs. With waqf, pesantren can develop independently without relying too much on the cost of education from students, thus allowing wider access to education for the community. In addition, waqf also contributes to improving the welfare of Islamic boarding schools through productive asset management, such as agricultural land, cooperative businesses, and sharia investments, the proceeds of which can be used to support the sustainability of education in Islamic boarding schools.

However, in order for the benefits of waqf to be optimized to the maximum, good and systematic management is needed. Professional waqf management allows pesantren to manage waqf assets in a more transparent, productive, and in accordance with sharia principles. The main challenges in the management of Islamic boarding school waqf today are the lack of waqf literacy among the community, the lack of professionals in the management of waqf assets, and the limitations of regulations that support innovation in the management of productive waqf. Therefore, collaboration between the government, waqf institutions, academics, and the community is urgently needed to increase the effectiveness of waqf in supporting Islamic boarding schools. With the right strategy, waqf can not only ensure the sustainability of Islamic education, but also strengthen the economic independence of Islamic boarding schools in the modern era.

According to (KBBI), Technology has two main meanings: Scientific methods to achieve practical goals; applied science, and all means to provide the necessary needs for the continuity and comfort of human life. This understanding emphasizes that technology is the result of the application of science in daily life. The science gained through research and experiments is used to create methods or tools that can help humans complete their work more efficiently. An example is communication



technology such as the telephone and the internet that makes it easier to interact remotely. In other words, technology can encompass all the tools, systems, and innovations that humans use to meet their needs. Technology can be machines, software, or production systems that help improve the quality of human life.

The development of science and technology has had an impact on various aspects of human life (Sahila et al., 2024). According to (Muchasan et al., 2024) Pesantren As a traditional Islamic educational institution, it is also inseparable from the positive impact offered by technology. The use of technology in Islamic boarding schools can provide great benefits in improving the quality of education, expanding accessibility, and preparing Islamic boarding school students to face the challenges of the times. This is in line with that Islamic boarding schools will be more widely known if they can take advantage of technological advances. This is supported by the research of Ahmad Faozan and Haris Supratno, Islamic boarding schools are able to adapt to the development of scientific and technological advances by adapting modern management and science (Amarudin et al., 2024).

As has been explained, the use of technology in Islamic boarding schools has a significant positive impact in improving the quality of education and expanding accessibility for students. With the integration of technology, pesantren can implement more interactive learning methods, such as the use of e-learning, digital libraries, and online-based learning platforms that allow students to gain knowledge from various sources. In addition, technology also helps in the management of pesantren administration, ranging from student data management to a more transparent and efficient digital-based financial system. Not only that, the use of technology in Islamic boarding schools also plays a role in preparing students to face the challenges of the digital era, by equipping them with relevant skills such as digital literacy and technology-based entrepreneurship. Thus, technology can be an effective tool for pesantren to remain relevant and competitive in the midst of the times, without eliminating traditional values that are the core of pesantren education.

2. Methods

The method in this study is a qualitative method with a library research approach. This approach was chosen because the research aims to explore, analyze, and understand various theories, concepts, and previous findings related to the application of technology in waqf Islamic boarding schools. This study uses a qualitative descriptive design, where the data collected will be analyzed in depth to describe the phenomena that occur related to the role of technology in the management of waqf boarding schools. This study focuses on waqf pesantren in Indonesia, with the main discussion on how technology can be utilized in various aspects, such as education, administration, and waqf asset management.

The main sources of data in this study come from literature relevant to the topic being researched, including scientific journals, books, articles, theses, and dissertations that discuss the use of technology in pesantren education, waqf management, and the management of waqf-based educational institutions. In addition, data was also obtained from policy documents and previous research related to Islamic boarding schools and waqf in Indonesia.



3. Results and Discussion

Pondok pesantren is the oldest Islamic educational institution in Indonesia (Fitri & Ondeng, 2022). Pondok pesantren as one of the Islamic educational institutions in Indonesia providing religious education to students, playing a strategic role in the education and character development of the ummah (Oktaria et al., 2023). With the development of increasingly sophisticated technology, pesantren is guided to be able to use effective technology to preserve the tradition of Islamic education, as well as develop the potential of the pesantren itself (Sahila et al., 2024). However, in integrating technology in the pesanren, it is necessary to pay attention to the traditions that already exist, so that these institutions remain relevant in the digital era without sacrificing the core values of pesantren (Happyana & Istiqomah, 2025).

As previously explained. This research aims to explore the role of technology in preserving and developing waqf pesantren in Indonesia. Based on the analysis of various relevant literature, this study finds that technology has a significant role in improving the efficiency and sustainability of waqf-based Islamic boarding schools. The results of these findings are discussed in two main parts: First, the role of technology in the management of Islamic boarding schools both in education, Islamic boarding school management, and waqf in Islamic boarding schools. Second, challenges in the implementation of technology in waqf pesantren.

The role of technology has had a significant impact on the management of Islamic boarding schools, both in terms of education, management, and waqf management.

a) The Role and Challenges of Technology in Pesantren Education

The role of technology in pesantren education can encourage the strategic integration of technology in education to improve the quality of learning, competent educators, and adaptation and innovation (Habibi, 2022; Ubaidillah et al., 2025). Based on research conducted (Muchasan et al., 2024) Pesantren can utilize technology to provide training and professional development to teachers, including through webinars, online courses, and independent learning platforms as an effective solution in improving the quality of education, optimizing learning, and preparing students and teachers to face future challenges.

Based on previous research, the use of digital platforms, such as applications and social media, allows pesantren to provide effective solutions in improving the quality of education. With online learning, it can also spread more diverse learning materials and touch more audiences, including students who are in remote areas (Najib, 2024; Siswati, 2017).

Challenges in the implementation of technology in pesantren education often face limited resources. Some research, such as the one conducted by (Suhada et al., 2022), It shows that pesantren in areas with inadequate internet networks often have difficulty in optimizing the use of technology. This can be overcome by developing technological infrastructure in Islamic boarding schools which must be a priority so that the benefits of technology can be felt to the maximum.

The use of the internet also has risks in using it as a learning medium. According to (Marsum & Syahroni, 2020) It is considered to have more negative impacts on student learning. This is because internet access for learning materials is feared to make



students lazy to memorize. Learning to use the internet can be overcome with appropriate supervision and learning methods outside of existing learning.

The biggest educational challenge comes from the condition of traditional education which urgently needs to be maintained. This was conveyed in the research (Muchasan et al., 2024) which mentioned that traditional pesantren tend to maintain values and learning methods that have existed for a long time. However, we also have an obligation to follow the situation and conditions that are getting more and more advanced day by day without eliminating elements of existing traditions (Faizah et al., 2024; Fitri & Ondeng, 2022; Happyana & Istiqomah, 2025).

b) The Role of Technology and Challenges in Pesantren Management

In addition to education, technology also plays an important role in pesantren management, including administrative, financial, and student data management. Several studies show that pesantren can utilize technology in managing pesantren administration, so that it can increase efficiency and transparency in the management of Islamic boarding schools (Fadhilah et al., 2024; Oktaria et al., 2023). In addition, the rapid development of information technology, especially the internet and websites, can provide convenience in the management of administrative data of educational institutions (Pedro et al., 2019; Fitri & Ondeng, 2022; Happyana & Istiqomah, 2025). Technology can also help in managing students' finances, so students can manage their finances (Fahlefi et al., 2022).

In today's digital era, innovation and the use of information technology are very important in the management of waqf. Human resources of waqf managers need to have skills in using technology to increase efficiency and transparency in asset management. For example, the use of a waqf information management system can help in recording transactions, financial reporting, and monitoring assets in real-time. With technology, the administrative process becomes faster and more accurate, as well as facilitating communication between managers and waqf providers and beneficiaries. For example, Islamic boarding schools managed with technology-based systems such as Cloud-based Accounting or ERP (Enterprise Resource Planning) can do more efficient recording without having to do manual work that is time-consuming and prone to errors. With this system, financial reports can be accessed in real-time by managers and interested parties, such as waqif and donors. This not only increases transparency, but also improves the overall financial management of the pesantren (Masyhadi, 2024).

However, the main obstacle in the implementation of this technology is the lack of skilled human resources in operating the system. Pesantren that still rely on managers with limited skills in the use of technology. As shown by (Syafaat & Sukur, 2023) Islamic boarding schools in the implementation of their administration are still carried out manually with weaknesses such as lack of data accuracy, difficulty in finding information, limitations in managing student data, and slow processes. Limited technical knowledge among pesantren managers causes difficulties in utilizing the potential of technology to the fullest. Therefore, training for pesantren managers and administrative staff is very important to improve their capabilities in using existing technology.



c) The Role of Technology in Waqf Asset Management in Pesantren

Waqf with its various benefits has been proven to have a significant role in various improvements in the welfare of Muslims both in Indonesia and the world, especially in the field of education development, Islamic boarding schools, and universities (Arroisi, 2020). In addition, with the existence of technology, especially in finance/fintech, and social media also plays a role in helping the development of waqf (Dharmarianti et al., 2024).

As expressed by (Mubarok, 2020), The use of technology in waqf management can help Islamic boarding schools to monitor and manage waqf assets, because only by using the sophistication of information technology, waqf management by Islamic boarding schools globally can be realized. Next (Farokhah, N et al., 2019) also researched 129 Muslims in Java who adopted technology to carry out money waqf. The results show that waqf likes technology that makes their efforts effective and simplified in order to fulfill waqf.

Furthermore, technology can also be used for more productive utilization of waqf assets. For example, the use of technology in managing waqf land for productive businesses such as agriculture, livestock, or other small businesses can increase the income of Islamic boarding schools and provide more benefits to the surrounding community (Amarudin et al., 2024; Arroisi, 2020). By using technology, pesantren can ensure that waqf assets are used in accordance with the original purpose and provide a sustainable positive impact (Susilo et al., 2021).

In addition to technology in soft form, applications also have the potential to ensure waqf assets. as conveyed (Ardiansyah et al., 2016) that innovations in the form of applications that can be accessed on Android and IOS using the internet network can package digital transactions in the field of Islamic philanthropy equipped with the latest information about the condition of Islamic boarding school institutions. This makes it easier for alumni and the community in general to find out the situation that is happening in an Islamic boarding institution, such as renovations or being affected by disasters so that they need financial assistance.

The challenge of effective management of waqf assets through technology also requires a significant initial investment, both in terms of the procurement of digital systems and training of pesantren managers to operate the system. This is due to the limited funds owned by many Islamic boarding schools, especially Islamic boarding schools that depend on donations and waqf from the community (Gustina. et al., 2024).

The management of waqf assets often still faces various challenges, such as a lack of transparency and efficiency in asset utilization. One of the solutions that can be presented through technology is the use of a blockchain-based waqf management system or digital platform that can ensure security, transparency, and accountability in the management of waqf assets (Masyhadi, 2024; Rahmania & Maulana, 2023). This can have an impact on the trust of waqf users or the community in the pesantren that will be given waqf funds and solutions in providing information to waqf and people who want to do waqf.

Although technology has great potential to improve the management of waqf boarding schools, the implementation of technology in Islamic boarding schools still faces various challenges. In addition to infrastructure limitations, another challenge is strategies related to the use of technology in the management of Islamic boarding



schools and waqf. Some Islamic boarding schools still do not fully understand the importance of using technology in the management of waqf and education.

In addition, the lack of literacy for the implementation of technology is also a big obstacle for waqf boarding schools. Most Islamic boarding schools still rely on limited donations and waqf funds, making it difficult to invest in adequate technology. Therefore, the necessary literacy is needed so that pesantren can know the role of existing technology and the challenges that must be faced.

This research maps the existing roles and challenges for the implementation of technology both in education, management, and waqf management to preserve and develop waqf pesantren in the Nusantara. The results found are summarized and presented in the form of table 1, as follows.

Table 1: Existing roles and challenges for the implementation of technology both in education, management, and waqf management to preserve and develop waqf pesantren in Nusantara.

	Role	Challenge	Solution
Pesantren Education	1. Encourage the strategic integration of technology in education to improve the quality of learning, competent educators, and adaptation and innovation	1. Islamic boarding schools in areas with inadequate internet network often have difficulty in optimizing the use of technology	1. The development of technological infrastructure in Islamic boarding schools must be a priority so that the benefits of technology can be felt to the maximum 2. Learning to use the internet can be overcome with appropriate supervision and learning methods outside of existing learning
	2. Effective solutions in improving the quality of education, optimizing learning, and preparing students and teachers to face future challenges	2. Internet access for learning materials is feared to make students lazy to memorize	
	3. Online learning can also spread more diverse learning materials and touch more audiences, including students in remote areas	3. Traditional educational conditions that need to be maintained	3. Learning without removing elements from existing traditions
Pesantren Management	1. Utilizing technology in the management of pesantren administration can increase efficiency. and transparency in the management of Islamic boarding schools	1. Pesantren in the implementation of its administration is still carried out manually with weaknesses such as lack of data accuracy, difficulty in finding information,	1. Training for pesantren managers and administrative staff is very important to improve their capabilities in using existing technology



	<p>limitations in student data management, and slow processes</p> <p>2. The internet and websites can provide convenience in managing administrative data of educational institutions</p> <p>3. Technology can also help in managing students' finances, so students can manage their finances</p>	
Waqf Asset Management in Pesantren	<p>1. Finance/Fintech, and social media also play a role in helping the development of waqf</p> <p>2. Technology in waqf management can help pesantren to monitor and manage waqf assets, because only by using sophisticated information technology, waqf management by pesantren globally can be realized</p> <p>3. Technology can be used for more productive utilization of waqf assets</p> <p>4. The application also has the potential to ensure waqf assets to Nadzir and the community</p>	<p>1. Limited funds owned by many Islamic boarding schools, especially Islamic boarding schools that depend on donations and waqf from the community</p> <p>1. The use of a blockchain-based waqf management system or digital platform that can ensure security, transparency, and accountability in the management of waqf assets has an impact on the trust of waqf users or the community in the pesantren that will be given waqf funds and solutions in providing information to waqf and people who want to do waqf</p>

From this table, it can be concluded that technology has a very important role in preserving and developing waqf Islamic boarding schools in Indonesia. Technology not only plays a role in improving the quality of education in Islamic boarding schools, but also in improving the efficiency of Islamic boarding school management and waqf asset management. However, the implementation of technology in Islamic boarding



schools still faces challenges related to infrastructure, limited human resources, and funding. Therefore, a solution is needed to support the development of technology in Islamic boarding schools as shown in table 1.

4. Conclusion

This research highlights the role of technology in preserving and developing waqf Islamic boarding schools in Indonesia. Based on the analysis of the existing literature, it can be concluded that technology has a significant impact on improving the quality of education, the efficiency of pesantren management, and the management and utilization of waqf assets. Technology can support pesantren to access a wider range of educational resources through digital platforms, as well as introduce more inclusive and flexible learning methods. In addition, technology also plays a role in increasing transparency and efficiency in the management of pesantren administration and waqf finance. Management information systems and technology-based applications make it easier to record and report Islamic boarding school finances, as well as manage waqf assets in a more transparent and organized manner. This is very important to increase accountability and strengthen public trust in the management of waqf funds.

However, the application of technology in waqf pesantren still faces a number of challenges, such as limited technological infrastructure, limited technical knowledge among pesantren managers, and limited funding. Therefore, the use of a blockchain-based waqf management system or digital platform that can ensure security, transparency, and accountability in the management of waqf assets is necessary to gain the trust of waqf users or the community in Islamic boarding schools. So that information can be widely known for waqif who want to give their waqf funds for the development of Islamic boarding schools. Overall, despite these challenges, this study shows that technology has great potential in preserving and developing waqf pesantren in Indonesia, especially in improving operational efficiency, quality of education, and sustainability of waqf management. Therefore, it is important to encourage wider and more equitable adoption of technology in Islamic boarding schools, in order to increase the role of Islamic boarding schools in creating quality human resources and supporting the socio-economic development of the Indonesian people.

This research is expected to be a reference for policy makers, pesantren managers, and interested parties in the development of waqf-based pesantren, to optimize the use of technology in order to create a more advanced, independent, and sustainable pesantren.

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Assessment for Learning in Inquiry-Based and Discovery-Based Learning Environments: Exploring Theoretical and Practical Applications in Indonesian Elementary Education

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Submitted: 25/01/2025 | Revision Accepted: 28/01/2025 | Online: 08/08/2025

Abstract:

Purpose: This study examines the role of Assessment for Learning (AfL) in inquiry-based and discovery-based learning in Indonesian elementary schools. It explores how AfL supports student engagement, self-regulation, and critical thinking, while addressing challenges such as large class sizes, limited teacher training, and rigid assessment frameworks.

Methods: This study employs a literature review approach, synthesizing findings from global and local research on AfL and student-centered pedagogies. It evaluates AfL strategies, including peer assessment, feedback loops, and self-assessment, and their integration into constructivist and sociocultural learning frameworks.

Results: AfL enhances student motivation, reflection, and learning autonomy in inquiry-based and discovery-based settings. It improves collaboration and metacognitive skills, leading to better problem-solving and deeper understanding. However, systemic barriers, such as hierarchical teacher-student dynamics, inconsistent policy support, and resource disparities, hinder effective implementation. Rural schools face greater challenges due to limited professional development and infrastructure gaps.

Conclusions: AfL is a transformative tool for improving student-centered learning, but its success depends on curriculum alignment, teacher training, and culturally responsive practices. Policymakers must support AfL integration by promoting professional development, flexible assessment policies, and digital innovations. Future research should focus on longitudinal studies and technology-enhanced AfL strategies to bridge the gap between policy and classroom practice.

Keywords:

Assessment for Learning, discovery-based learning, formative assessment, inquiry-based learning, Indonesian education, self-regulation

1. Introduction

Education systems across the globe are increasingly adopting innovative, student-centered approaches aimed at promoting critical thinking, creativity, and lifelong learning. Among these approaches, inquiry-based and discovery-based learning have become more prominent due to their focus on active engagement and problem-solving. These methods allow students to build knowledge through exploration, experimentation, and collaborative inquiry. For instance, Finland has made inquiry-based learning a key element of its highly regarded education system, fostering



creativity and deep contextual understanding among its students through approaches such as phenomenon-based learning, which enhances multiliteracy skills and interdisciplinary exploration (Symeonidis & Schwarz, 2021).

Likewise, Singapore's inclusion of inquiry-based practices in its science education curriculum has effectively enhanced analytical thinking and experimental skills, emphasising the importance of sustainable implementation strategies and teacher adaptability to support 21st-century education (Tan & Tan, 2016). These international examples illustrate the transformative potential of these teaching methods in improving learning outcomes across various educational contexts.

In Indonesia, the 2013 Curriculum (Kurikulum 2013) signifies a shift toward thematic and integrated learning strategies that align well with inquiry-based and discovery-based methodologies. However, despite these progressive policy updates, systemic challenges persist. Insufficient teacher training, resource shortages, and the logistical challenges of managing large class sizes have impeded widespread adoption. Studies indicate that situational beliefs and contextual factors, such as limited resources and varying teacher readiness, continue to influence the effectiveness of inquiry-based learning implementation in Indonesia (Rustaman, 2020). Despite these challenges, innovative schools and pilot initiatives demonstrate that when effectively applied, inquiry-based approaches positively influence students' attitudes towards science and their overall engagement (Widodo et al., 2020). These successes emphasize the potential for scaling such methodologies to tackle ongoing challenges in Indonesian elementary education.

At the same time, there is a growing global emphasis on refining assessment practices through formative and student-centred methods, exemplified by Assessment for Learning (AfL). AfL is broadly defined as an ongoing process that uses formative assessment techniques to support and enhance student learning (Black & Wiliam, 1998). It shifts the focus from evaluating outcomes to improving the learning process itself by integrating feedback, peer review, and self-assessment.

According to Sadler (1989), AfL is essential for helping students understand the standards they aim to achieve and the steps necessary for improvement. My understanding of AfL builds on these expert views and conceptualizes it as a holistic approach where assessment is not merely a means of evaluation but a scaffold that actively shapes and directs student learning. By involving learners in setting goals, reflecting on progress, and engaging with feedback, AfL transforms assessment into a dynamic, interactive process. This approach empowers students to become critical thinkers and independent learners, fostering a deeper connection to their educational journey. Its alignment with inquiry-based and discovery based learning ensures a synergistic framework for nurturing academic success and personal development.

This literature review examines the relationship between these educational innovations through three guiding research questions:

1. How do inquiry-based and discovery-based learning strategies enhance educational outcomes in Indonesian elementary schools?
2. How do Assessment for Learning (AfL) techniques support and bolster the effectiveness of these teaching methods?



3. In what ways can personal development indicators, such as self-regulation and reflective practices, be effectively employed to encourage self-assessment and improve student performance?

By exploring these questions, this review seeks to offer a thorough understanding of how AfL can be combined with inquiry-based and discovery-based learning to overcome systemic obstacles and improve educational outcomes in Indonesian elementary schools. The results are expected to contribute to educational reform initiatives by providing practical suggestions for nurturing reflective, independent learners and fostering a culture of continuous enhancement in teaching and learning practices.

2. Literature Review

The literature surrounding inquiry-based and discovery-based learning, as well as assessment for learning (AfL), provides a robust foundation for understanding the pedagogical strategies that foster deeper engagement, critical thinking, and holistic student development. Grounded in constructivist theories by educational pioneers such as Jean Piaget, Jerome Bruner, and John Dewey, these approaches emphasize active exploration, experiential learning, and reflective practices (Piaget, 1973; Bruner, 1961; Dewey, 1938).

Over the years, numerous studies have demonstrated the effectiveness of these methodologies in enhancing academic achievement and equipping learners with essential 21st-century skills like collaboration, problem-solving, and adaptability (Hmelo-Silver et al., 2007; Barron & Darling-Hammond, 2008).

Key Works on Inquiry-Based and Discovery-Based Learning

Inquiry-based and discovery-based learning has been linked to constructivist theories for a long time, particularly those put forward by Jean Piaget and Jerome Bruner. Piaget highlighted that knowledge is constructed through exploration and interaction, while Bruner argued that discovery leads to deeper intellectual engagement and problem-solving. Dewey (1938) emphasized the significance of experiential learning, which is a fundamental principle of inquiry-based methods, promoting critical thinking and reflective skills.

Recent studies, such as Barron and Darling-Hammond (2008), further confirm the effectiveness of these methodologies, particularly in enhancing collaboration, creativity, and problem-solving in STEM fields. Alfieri et al. (2011) point out the motivational and cognitive advantages of discovery-based learning, stressing its ability to engage students deeply in their learning journey. The results from these studies highlight significant positive outcomes associated with inquiry-based and discovery-based learning methodologies.

Barron and Darling-Hammond (2008) found that students engaged in inquiry-based approaches demonstrated improved teamwork and communication skills, which translated into better performance on complex, real-world tasks. Similarly, Alfieri et al. (2011) reported that students in discovery-based learning environments exhibited higher levels of intrinsic motivation and critical thinking, leading to greater retention of concepts and problem-solving efficiency. These findings emphasize that such methodologies not only foster academic achievement but also equip learners



with essential 21st-century skills, making them more adept at navigating challenges in STEM and other interdisciplinary fields.

In Indonesia, research conducted by Arends et al. (2015) and Widiati and Hayati (2020) indicates that these approaches, when aligned with the 2013 Curriculum (Kurikulum 2013), can significantly enhance student participation and comprehension. Despite facing systemic challenges like large class sizes, limited teacher training, and inadequate resources, case studies from innovative schools demonstrate the potential of these methods to address achievement gaps and cultivate independent learners. Tackling these obstacles through targeted policy reforms and professional development is essential to unlocking the full potential of these approaches in Indonesia's varied educational settings.

Assessment for Learning Techniques

Assessment for Learning (AfL) consists of practices that utilize assessment as a means to guide and support learning, rather than merely to evaluate outcomes as shown in figure 1. Key techniques, including peer assessment, feedback loops, and self-assessment, align well with inquiry based and discovery-based teaching methods. Black and Wiliam (1998) show how peer assessment enhances collaborative skills and improves students' understanding of evaluation criteria, while Hattie and Timperley (2007) note that feedback is a crucial driver of learning, particularly when it is specific, actionable, and timely.

In Indonesia, AfL is still underutilized but shows promise when integrated into classroom practices. Cultural aspects, such as hierarchical teacher-student relationships, often restrict the adoption of practices like peer assessment. However, pilot programs have demonstrated that tailored strategies, such as group-based feedback sessions and scaffolded self-assessment tools, can effectively change traditional dynamics and enhance learning outcomes. By promoting a culture of collaboration and continuous improvement, AfL techniques can make learning processes more inclusive and reflective.

AfL techniques, such as self-assessment and peer feedback, provide opportunities for students to actively participate in their learning journey, making the process more inclusive and reflective. Research by Black and Wiliam (1998) underscores that when students engage in self-assessment, they develop a deeper understanding of their strengths and areas for improvement, fostering self-regulation and ownership of their learning. Furthermore, Hattie and Timperley (2007) emphasize that timely and specific feedback encourages a growth mindset, enabling students to view mistakes as opportunities for learning. In Indonesia, adapting these techniques to local contexts—such as encouraging collaborative group discussions and using culturally appropriate rubrics—can bridge hierarchical gaps and empower students to share their perspectives. This shift not only democratizes classroom interactions but also promotes reflective practices, helping students connect their learning to real-world applications.

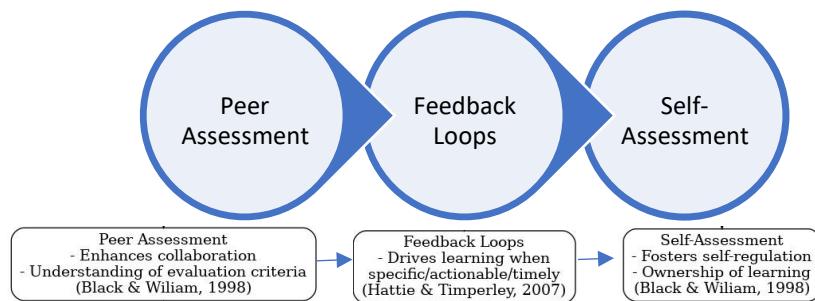


Figure 1: Assessment for Learning (AfL) Techniques

Personal Indicators of Development

Personal Indicators of Development (PID) as shown in figure 2 includes self-regulation, goal-setting, and reflective practices. The indicators are integral to the success of Assessment for Learning (AfL). According to Bandura's self-efficacy theory, fostering students' belief in their ability to succeed is crucial for motivating them to take ownership of their learning. Zimmerman and Schunk (2011) further emphasize that metacognitive strategies, such as planning, monitoring, and evaluating learning processes, play a pivotal role in improving academic achievement. These indicators cultivate essential skills such as independence, resilience, and a growth mindset, enabling students to adapt to challenges and persist in their learning endeavours.

Recent research in Indonesia, including studies by Hamied (2020) and Irawan et al. (2019), has explored the integration of PID within AfL practices. Effective tools such as reflective journals, student-led goal-setting exercises, and curated learning portfolios have been shown to enhance students' ability to monitor their progress and adjust their strategies for improvement. These practices not only align seamlessly with the principles of inquiry based and discovery-based learning but also encourage deeper engagement and critical thinking. By developing these personal indicators, students are better equipped for lifelong learning in an ever-evolving educational and professional landscape.

Integrating Personal Indicators of Development (PID) with AfL in inquiry-based and discovery-based learning environments creates a synergistic approach to fostering holistic student growth. Research by Black and Wiliam (2018) highlights that AfL practices, such as peer feedback and self-assessment, naturally cultivate self-regulation and goal-setting as students take ownership of their learning.

These processes align with the exploratory nature of inquiry-based and discovery-based learning, where students are encouraged to investigate, hypothesize, and evaluate their progress. For example, reflective practices embedded within inquiry tasks allow students to make meaningful connections between their learning strategies and outcomes, reinforcing their metacognitive abilities. By combining AfL techniques with PID-focused strategies, educators can create a more inclusive and student-centered environment that nurtures critical thinking, collaboration, and adaptability – key skills for thriving in today's complex, knowledge-driven world.

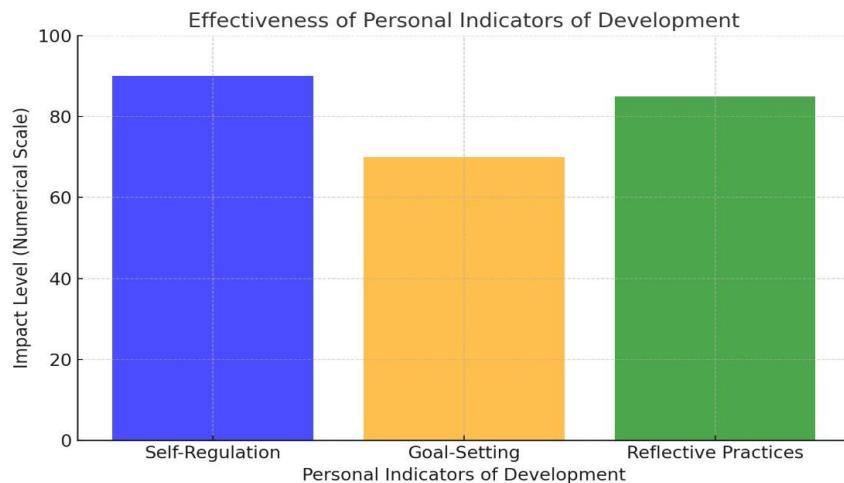


Figure 2: Personal Indicators of Development

Comparisons with Alternative Assessment Methods

Table 1 illustrates the comparison of process-oriented and outcome-oriented. Unlike summative assessments, which predominantly focus on evaluating final outcomes, Assessment for Learning (AfL) prioritizes the learning process, making it highly effective in inquiry-based and discovery-based educational settings. Summative assessments, while providing essential benchmarking data for evaluating overall achievement, often fail to capture the incremental progress, critical thinking, and deeper understanding students acquire through exploratory, student-centered learning. By shifting the emphasis from results to the process, AfL enables a more nuanced understanding of student development and learning dynamics.

Research by Andrade (2010) and Brookhart (2013) underscores how AfL enhances inquiry-based learning environments by incorporating formative feedback, self-assessment practices, and goal-oriented strategies. These approaches foster student agency, encouraging learners to actively reflect on their progress, identify areas for improvement, and take ownership of their educational journey. In such settings, students are not passive recipients of knowledge but active participants in constructing and evaluating their understanding.

In Indonesia, combining AfL with traditional summative methods offers a pragmatic solution that addresses both policy requirements and the need for innovative, student-centered learning practices. Summative assessments remain critical for standardized reporting and accountability, yet integrating AfL techniques—such as formative feedback loops, peer evaluation, and reflective practices—creates a more balanced and holistic framework. For example, pairing rubrics used in summative evaluations with iterative feedback sessions can deepen student understanding while maintaining alignment with national curriculum standards.

Furthermore, AfL supports the broader goals of inquiry-based and discovery-based learning by enabling continuous assessment tailored to individual progress. It bridges the gap between assessment and pedagogy, helping teachers provide targeted interventions and scaffolding that support diverse learning needs. When used effectively, this blended approach can enhance the inclusivity and efficacy of



assessment practices, equipping students with the critical thinking, collaboration, and problem-solving skills essential for success in a rapidly changing world.

Table 1: Comparisons with Alternative Assessment Methods

Focus	Process-oriented	Outcome-oriented
Benefits	Encourages reflection/selfregulation; fosters collaboration; provides actionable feedback.	Provides standardised benchmarks; useful for accountability/reporting purposes.
Limitations	Requires more time/resources; cultural barriers may limit adoption.	Does not capture incremental progress or deeper understanding gained during learning processes.

Summary of Research

The synthesis of research highlights the interconnection between AfL, inquiry-based learning, and discovery-based approaches. By integrating AfL techniques into constructivist learning environments, educators can improve students' critical thinking, collaboration, and self-regulation skills. However, the effective implementation of these approaches in Indonesia will rely on addressing systemic challenges like unequal resource distribution and cultural barriers.

The literature also emphasizes the necessity for ongoing professional development and the development of culturally responsive AfL practices that align with Indonesia's diverse educational landscape. By emphasizing these interventions, policymakers and educators can ensure that AfL emerges as a transformative force, nurturing reflective and independent learners who are well-prepared for future challenges.

3. Theoretical Framework

Constructivist Theory

Constructivist theory, based on the foundational ideas of Jean Piaget and Lev Vygotsky, suggests that learners actively build knowledge through their experiences, social interactions, and reflections. This theory supports inquiry-based and discovery-based learning, where students tackle real-world problems and collaboratively find solutions. In Indonesian classrooms, constructivism appears in practices such as thematic projects on local environmental issues, allowing students to explore, hypothesize, and propose solutions through guided discovery.

Within the context of Assessment for Learning (AfL), constructivist principles are put into practice by integrating formative assessment tools that promote students' cognitive engagement. For example, teachers might use reflective journals, concept



maps, or open-ended questions to gauge students' thought processes and provide feedback that encourages deeper investigation. This approach aligns well with the Indonesian elementary education framework, which advocates for integrated learning as outlined in the 2013 Curriculum (Kurikulum 2013). Here, AfL not only assists knowledge construction but also fosters critical thinking and problem-solving skills, empowering students to take an active role in shaping their educational journey.

Self-Regulated Learning (SRL) Theory

Self-regulated learning theory, as defined by Zimmerman (1989), highlights the significance of metacognitive processes, motivation, and adaptable strategies in achieving academic objectives. SRL theory is especially important in Indonesia's educational environment, where promoting student independence is crucial in addressing challenges like large class sizes and limited teacher availability in rural areas. AfL practices that are based on SRL theory encourage students to manage their learning through goal-setting, self-monitoring, and reflective practices. For instance, providing detailed rubrics for projects or assignments enables students to evaluate their work against specified criteria and pinpoint areas for improvement. In the field of science education, teachers could prompt students to design simple experiments, document their findings, and assess their outcomes with a self-assessment checklist. This not only promotes self-regulation but also develops a growth mindset, inspiring students to perceive mistakes as chances for learning. Over time, SRL-informed AfL practices help in nurturing lifelong learners capable of adapting to various challenges.

Sociocultural Theory

Sociocultural theory, articulated by Lev Vygotsky, emphasizes the connection between social interactions, cultural contexts, and learning processes. A cornerstone of this theory is the concept of the Zone of Proximal Development (ZPD), which identifies the range of tasks that learners cannot yet perform independently but can successfully achieve with guidance or collaboration. This guidance often comes from more knowledgeable others, such as teachers, peers, or mentors, who provide the necessary scaffolding to bridge the gap between what learners currently know and what they are capable of mastering. Over time, as learners gain confidence and competence, this scaffolding is gradually removed, allowing them to perform these tasks independently.

In Indonesia's collectivist culture, the ZPD aligns well with traditional educational practices that emphasize community-based learning, interdependence, and shared problem solving. This cultural compatibility makes ZPD-based approaches particularly effective in fostering collaborative inquiry and group learning, where students actively engage with peers and teachers to co-construct knowledge. For example, in inquiry-based and discovery-based learning environments, the ZPD can guide educators in structuring tasks that are challenging yet achievable, ensuring students remain engaged and supported throughout their learning journey.

AfL strategies influenced by sociocultural theory utilize peer and teacher interactions to support learning. For example, during a group inquiry task, students might work together to develop a solution for a community issue, such as waste management in their village. Peer assessment sessions can be integrated, allowing



students to provide constructive feedback based on a shared rubric. Such activities not only enhance understanding within the ZPD but also develop essential soft skills like teamwork, communication, and respect for one another.

Furthermore, sociocultural theory supports culturally relevant AfL practices by including local traditions and narratives. For example, teachers may create assessments based on traditional folktales or indigenous knowledge systems, enabling students to connect academic ideas with their cultural backgrounds. This method ensures that learning remains meaningful and contextually relevant, thereby boosting student engagement and motivation.

Synergizing Theories in Practice

The combination of these three theoretical frameworks—constructivist, self-regulated learning, and sociocultural—offers a strong basis for implementing AfL in inquiry-based and discovery-based learning settings. Constructivist methods emphasize active knowledge construction, while SRL focuses on fostering student independence and metacognitive skills, and sociocultural theory accentuates the importance of collaboration and cultural context. Together, they create a comprehensive learning experience that aligns with the objectives of Indonesia's education system to cultivate critical thinking, creativity, and lifelong learning.

By applying AfL practices within these theoretical foundations, educators can develop assessment strategies that not only measure but also actively enhance learning. This theoretical framework provides a means to address systemic challenges in Indonesian elementary schools and achieve the larger aim of educational reform.

4. Methods

Research Design

Figure 3 shows the research design of this study. The research adopts a convergent mixed-methods design to provide a comprehensive investigation into the effectiveness of Assessment for Learning (AfL) in inquiry-based and discovery-based learning environments. The rationale for this approach lies in its ability to merge the strengths of both quantitative and qualitative methods, addressing the complexities of educational practices from multiple perspectives. Quantitative data offers measurable evidence of outcomes, such as improvements in student performance or engagement, while qualitative insights capture the nuanced, context-specific experiences of students and teachers.

By integrating these complementary forms of data, the study achieves a more robust and holistic understanding of how AfL impacts learning processes and outcomes in Indonesian elementary schools. This design is particularly well-suited for exploring educational innovations, as it bridges the gap between numerical trends and the rich, descriptive realities of classroom dynamics.

The research is centred around three main objectives:

- a. To assess the influence of AfL on student learning outcomes and engagement.
- b. To explore the perceptions and experiences of teachers and students while implementing AfL practices.



c. To determine the barriers and supportive factors for implementing AfL within inquiry based and discovery-based pedagogical methods.

This research seeks to provide a comprehensive understanding of how Assessment for Learning (AfL) can enhance educational practices within inquiry-based and discovery-based learning environments in Indonesian elementary schools. By examining its impact on student outcomes and engagement, uncovering the perspectives of teachers and students, and identifying the challenges and enablers of implementation, the study aims to contribute actionable insights to bridge the gap between policy and practice. Ultimately, the findings will inform strategies to optimize AfL integration, fostering more effective and inclusive learning experiences.

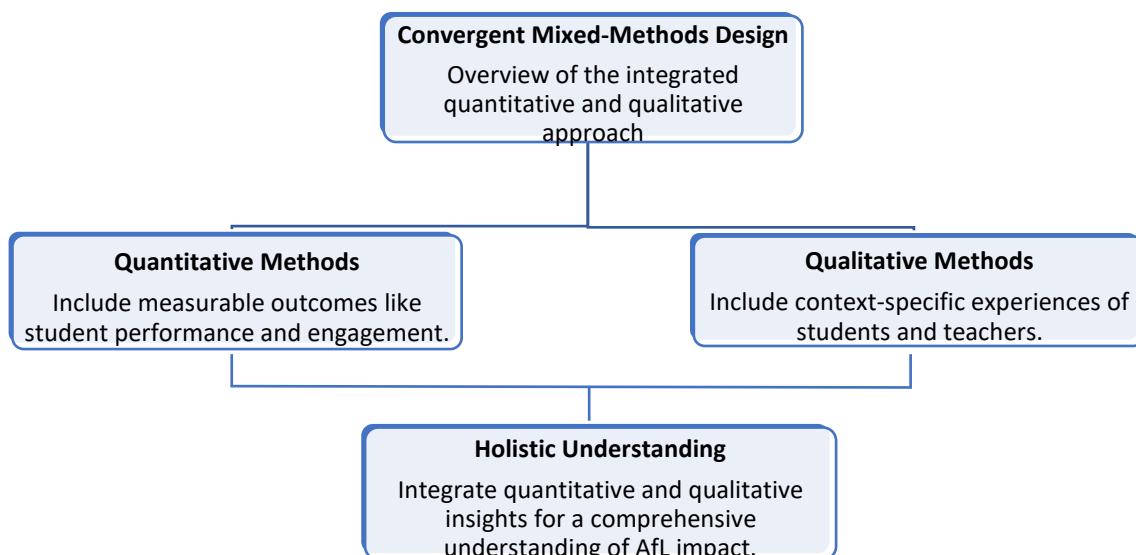


Figure 3: Research Design

Data Collection Methods

To achieve the research objectives, a comprehensive and systematic data collection strategy was developed to ensure a holistic understanding of the effectiveness and challenges of implementing Assessment for Learning (AfL) in inquiry-based and discovery-based learning environments. The chosen methods were carefully aligned with the study's objectives, focusing on capturing nuanced perspectives and robust evidence.

1. Survey

Surveys were strategically designed and distributed to both teachers and students, serving as a key tool to collect both quantitative and qualitative data on critical variables:

a) Objectives:

- i. For Students: The survey aimed to measure self-regulation, intrinsic motivation, and perceptions of peer feedback and formative assessment practices, thereby shedding light on their engagement and developmental progress.



ii. For Teachers: The objective was to assess assessment literacy, identify implementation challenges, and explore teachers' views on AfL's impact on student learning.

b) Reasons: Surveys provide a scalable and efficient method to collect standardized data, enabling comparisons across a wide range of participants. This approach allows for the inclusion of diverse educational contexts and varying levels of familiarity with AfL, offering a broader perspective on its implementation.

c) How surveys conducted:

- Structure: The surveys included:
 - Likert-scale items to quantify attitudes, beliefs, and perceptions.
 - Multiple-choice questions to explore trends and preferences.
 - Open-ended questions to capture qualitative insights, offering a deeper understanding of the participants' experiences.
- Distribution: Surveys were disseminated both in paper and online formats to ensure accessibility across urban and rural settings.

2. Semi-structured Interviews

a) Objectives: The interviews were designed to explore teachers' perceptions, experiences, and challenges in implementing AfL within the frameworks of inquiry based and discovery-based learning. They provided insights into:

- The practical integration of AfL techniques, including feedback loops, peer assessment, and formative evaluation.
- Teachers' strategies for fostering self-regulation and reflective practices among students.

b) Reasons: Interviews allow for nuanced exploration of individual experiences, shedding light on contextual factors such as teacher preparedness, cultural influences, and classroom dynamics.

c) Relation to Research Questions (RQ): This method supports answering RQ2 by investigating how AfL techniques bolster inquiry-based methods and RQ3 by uncovering how teachers facilitate personal development through self-assessment practices.

3. Focus Group Discussion

a) Objectives: Focus groups with students aimed to uncover their engagement, understanding, and perspectives on self-assessment and formative feedback practices. Key areas of exploration included:

- How students perceive and respond to AfL techniques in active learning settings.
- Their reflections on self-regulation, goal-setting, and peer feedback.

b) Reasons: Small group discussions promote open dialogue and provide richer, peer influenced insights into student experiences and attitudes.

c) Relation to Research Questions (RQ): This method directly addresses RQ3 by examining how personal indicators, such as self-regulation and reflective practices, are experienced by students within AfL.



4. Classroom Observations

- a) Objectives: Real-time classroom observations documented the application of AfL techniques within inquiry-based and discovery-based lessons. Specific focus was placed on:
 - i. Interaction patterns, including teacher-student and peer-to-peer exchanges.
 - ii. Instances of formative feedback, goal-setting, and reflective dialogue.
- b) Reasons: Observations capture authentic classroom dynamics, providing a direct link between AfL practices and their impact on student engagement and performance.
- c) Relation to Research Questions (RQ): This method contributes to RQ1 and RQ2 by illustrating how inquiry-based strategies enhance learning outcomes and how AfL techniques operate in real-world settings.

5. Artifacts and Documents

- a) Objectives: Student artifacts (e.g., reflective journals, science project portfolios) and teacher lesson plans were collected to:
 - i. Provide tangible evidence of AfL integration in inquiry-based activities.
 - ii. Evaluate how student work reflects self-regulation, creativity, and critical thinking.
- b) Reasons: Artifacts allow for the examination of both process and product, offering insights into student learning trajectories and teacher planning.
- c) Relation to Research Questions: This method supports RQ2 by demonstrating the outcomes of AfL practices and RQ3 by revealing how personal development indicators are reflected in student outputs.

Research Instruments

a) Survey Instruments:

To address the research objectives and directly link to the first and second research questions, the survey tools were carefully adapted from established instruments, including the Self-Regulation Questionnaire (SRQ) and the Assessment Practices Inventory (API) as seen in table 2. These instruments were chosen because of their proven reliability in assessing constructs like self-regulation, motivation, and assessment literacy—key variables in understanding how AfL enhances inquiry-based and discovery-based learning. The adaptation process involved rigorous translation into Indonesian, cultural adjustments to align with the local context, and pilot testing to ensure the questions resonated with both teachers and students. This process not only enhanced the validity of the surveys but also provided insights into how personal development indicators like self-regulation are perceived and practiced in Indonesian classrooms.



b) Observation Rubrics:

To answer the second and third research questions regarding the integration and effectiveness of AfL techniques in fostering student engagement and self-assessment, customized observation rubrics were developed. These rubrics targeted specific AfL components, such as the clarity and frequency of feedback, the quality of peer and self-assessment interactions, and the alignment of inquiry-based tasks with formative assessment goals. Observer training sessions ensured inter-rater reliability and uniform application across diverse classroom settings. By directly linking rubric items to the objectives, such as assessing how formative feedback encourages reflective practices, the observations provided rich, actionable data to evaluate both teacher implementation and student responses.

c) Interview and Focus Group Protocols:

Semi-structured interview and focus group protocols were designed to explore the perceptions, challenges, and practices of teachers and students in depth, addressing all three research questions. For teachers, the interviews investigated their experiences with AfL techniques, the barriers they face, and their strategies for incorporating personal development indicators like self-regulation and reflective practices into their teaching. For students, focus groups aimed to uncover their engagement levels, understanding of self-assessment, and reflections on formative assessment tools. To ensure relevance and cultural appropriateness, the protocols were reviewed by educational experts and adapted to Indonesia's unique educational landscape. This approach allowed the research to capture nuanced perspectives and emergent themes that might otherwise have been overlooked.

Table 2: Research Instruments

Instrument Type	Purpose/Objective Addressed by Instrument	Adaptation Process
<i>Self-Regulation Questionnaire (SRQ)</i>	Measure students' ability to plan/monitor learning processes within inquiry-based settings	Translated into Indonesian; culturally adjusted; pilot-tested for clarity/relevance
<i>Assessment Practices Inventory (API)</i>	Assess teachers' familiarity with formative assessment techniques	Adapted items focusing on peer/self-assessment practices relevant in Indonesian classrooms
<i>Observation Rubrics</i>	Evaluate implementation quality/frequency of AfL components	Developed rubrics targeting feedback loops/self-assessment interactions; observer training ensured consistency



Validity and Reliability

Ensuring the rigor of the research methods was paramount to achieving the study's objectives and answering the research questions. Each methodological step was carefully designed to enhance the reliability and validity of the findings:

a) Content Validity:

To align the instruments with the study's objectives and the constructs under investigation, subject-matter experts reviewed all tools, including surveys, observation rubrics, and interview protocols. This process ensured that the instruments effectively captured critical aspects of AfL, inquiry-based learning, and personal development indicators such as self-regulation and reflective practices. By aligning the tools with the constructs addressed in the research questions, this step reinforced the study's ability to measure key variables like engagement and the effectiveness of AfL techniques. Establishing content validity ensured the instruments could adequately assess how AfL supports inquiry-based and discovery-based learning environments (RQ1 and RQ2) and how personal indicators influence self-assessment and student performance (RQ3).

b) Pilot Testing:

Pilot testing was conducted in a small sample of Indonesian elementary schools to identify ambiguities, refine the language, and ensure cultural and contextual appropriateness. This iterative process improved the clarity and precision of survey questions and interview prompts while highlighting any potential biases or misinterpretations. Pilot testing not only validated the relevance of the instruments in the local context but also helped refine questions to elicit more accurate responses, ensuring that the data collected directly addressed the study's objectives and research questions.

c) Inter-Rater Reliability

To validate consistency in the observation data, multiple trained raters reviewed classroom interactions, applying structured rubrics. Cohen's kappa coefficient was calculated to measure agreement between raters, ensuring that the interpretations of AfL practices, such as formative feedback and student engagement, were consistent across observers. Inter-rater reliability was crucial for addressing RQ2, which examines how AfL techniques are implemented, and RQ3, which explores the role of self-assessment and reflective practices. It ensured that the collected data accurately represented classroom dynamics and teacher-student interactions.

d) Triangulation

Triangulation was employed by cross-verifying data from multiple sources, including surveys, interviews, focus groups, and classroom observations. This approach enhanced the reliability and credibility of the findings by ensuring that results were corroborated across methods. Triangulation was essential for answering all three research questions, as it provided a holistic view of how AfL techniques influence learning outcomes, teacher practices, and student self-



assessment. By integrating quantitative and qualitative insights, the study could present a more comprehensive understanding of the phenomena under investigation.

Data Analysis Methods

a) Quantitative Analysis:

Survey data were analysed using statistical software (e.g., SPSS, R) to compute descriptive statistics, correlations, and regression models. For example, regression analysis examined the relationship between AfL practices and student self-regulation or achievement. Inferential statistics were applied to test hypotheses about the effectiveness of AfL, with significance levels established at $p < 0.05$.

b) Qualitative Analysis:

Transcripts from interviews and focus group discussions were analysed thematically using coding frameworks. Key themes, such as teacher challenges, student engagement, and cultural influences, were identified through inductive and deductive coding. Classroom observation notes were analysed using pattern-matching techniques to compare observed practices with theoretical frameworks of AfL and inquiry-based learning.

c) Mixed-Methods Integration:

Quantitative results (such as self-regulation scores) were integrated with qualitative insights (such as student reflections) to provide a thorough understanding. For instance, survey findings on student motivation were contextualized with focus group discussions regarding how peer feedback impacted their learning experiences.

Ethical Considerations

- a) Informed Consent: All participants, including parents or guardians of student participants, provided written consent.
- b) Confidentiality: The data was anonymized, and identifiers were removed to maintain participant privacy.
- c) Voluntary Participation: Participants were made aware that they could withdraw from the study at any time without facing any penalties.
- d) Cultural Sensitivity: Data collection methods were modified to respect local customs and norms, ensuring participants felt at ease when sharing their experiences.



Limitations and Mitigation Strategies

Recognizing possible limitations, the study implemented measures to address them:

- a) Sample Diversity: Schools from both urban and rural areas were included to represent a variety of contexts.
- b) Resource Constraints: Simplified data collection tools, such as verbal feedback forms, were utilized in schools with limited resources to ensure everyone could participate.
- c) Cultural Barriers: Researchers used culturally responsive methods, such as presenting peer feedback as collaborative advice, to navigate hierarchical dynamics in classrooms.

5. Results and Discussion

Integrating Findings Across Case Studies

A review of various case studies highlights the significant influence of Assessment for Learning (AfL) when combined with inquiry-based and discovery-based learning. For example, in an urban elementary school in Indonesia, incorporating peer feedback and self-assessment during inquiry-based science lessons resulted in visible enhancements in student engagement and critical thinking skills.

Furthermore, longitudinal studies conducted in rural schools showed that the consistent application of AfL methods, such as structured reflections and goal-setting, led to gradual academic progress, especially among low-achieving students. These observations emphasize AfL's adaptability and its capacity to bridge performance gaps in different educational environments. When paired with inquiry-based learning, AfL serves as an active driver for deeper understanding, collaboration, and student investment in their learning.

Student and Teacher Perspectives

The experiences of students and teachers provide valuable insights into the application and outcomes of AfL. Students express increased motivation and a sense of independence when involved in self-assessment activities, like keeping personal learning journals. For instance, students in classrooms that utilized learning journals displayed enhanced metacognitive abilities and a more detailed comprehension of their academic progress.

From the teachers' standpoint, while AfL improves classroom environment and promotes student development, its application can be challenging due to the need to balance summative assessment requirements and adjust to new teaching roles. Despite these hurdles, figure 4 shows that the majority teachers voiced optimism, noting that AfL encourages deeper learning and aligns with inquiry-based teaching principles. Professional development initiatives were identified as vital for facilitating successful implementation.

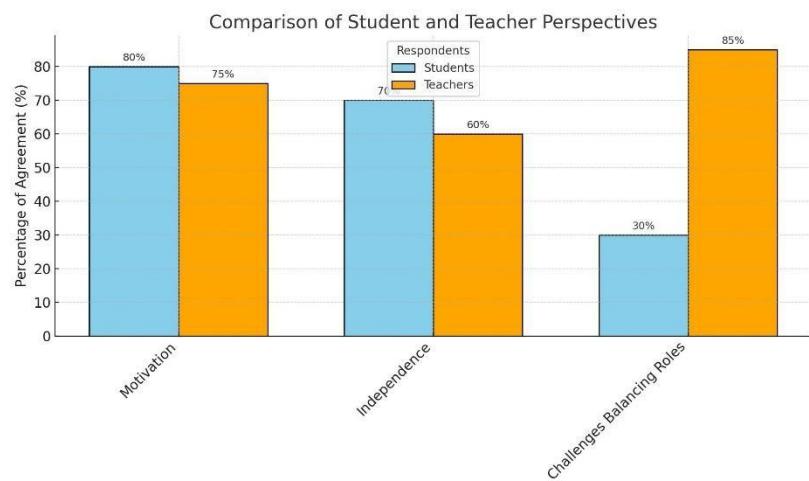


Figure 4: Comparison of Student and Teacher Perspectives

Regional Variations within Indonesia

The regional diversity of Indonesia plays a crucial role in the application of AfL. Urban schools benefit from enhanced infrastructure and access to teacher training, resulting in higher success rates when adopting AfL methods. In contrast, rural schools encounter systemic issues such as limited resources, large class sizes, and insufficient professional development avenues.

Nevertheless, straightforward AfL techniques like verbal feedback and group discussions have proven effective even in resource-limited settings. For example, a rural school in Central Java that integrated group-based formative assessments experienced noticeable improvements in student collaboration and problem-solving skills. This demonstrates the versatility of AfL practices across various educational contexts.

Cultural Influences on AfL Implementation

Cultural norms and the hierarchical nature of teacher-student relationships create both obstacles and opportunities for the adoption of AfL in Indonesia. In many educational settings, students often hesitate to participate in peer assessments or provide feedback to teachers due to longstanding values of respect and submission. Teachers, who are typically accustomed to traditional authoritative roles, might struggle to shift towards a facilitative approach that is integral to AfL.

However, culturally attuned modifications have shown potential. For instance, restructuring feedback as constructive guidance or incorporating local cultural elements, such as traditional stories or community-based initiatives, has increased the relevance and acceptance of AfL strategies. These culturally sensitive approaches facilitate a smoother integration of AfL within Indonesian classrooms.



Critical Analysis of AfL's Impact

Although the advantages of AfL are well recognized, its limitations deserve attention. Fundamental challenges include the absence of standardized frameworks for merging AfL with current curricula and the necessity for thorough teacher training. Inconsistent implementation across schools often diminishes its potential.

Additionally, inadequate support systems and insufficient monitoring exacerbate these issues. Despite these challenges, evidence indicates that AfL, when customized to meet the specific needs of Indonesian classrooms, can effectively tackle educational inequalities and promote valuable learning experiences. Collaborative efforts among schools, policymakers, and community members are essential for addressing these challenges.

Synthesis of Findings

The synthesis of findings underscores the complex nature of AfL's impact and its compatibility with inquiry-based and discovery-based learning. By addressing regional disparities, cultural considerations, and systemic challenges, educators can leverage AfL's full potential to enhance learning outcomes.

The results emphasize the necessity of continuous research to refine AfL practices and create scalable models that support enduring educational reform. Moreover, encouraging collaboration among key stakeholders—teachers, students, policymakers, and community members—emerges as a crucial strategy for embedding AfL into Indonesia's educational framework.

6. Conclusion

Summary of Key Findings

The results from this literature review highlight the considerable potential of Assessment for Learning (AfL) in improving educational outcomes in inquiry-based and discovery-based learning environments in Indonesian elementary schools. Integrating AfL with these teaching methods encourages active participation, self-regulation, and critical thinking among students. Theories related to constructivism, self-regulated learning, and sociocultural perspectives provide a strong theoretical basis for understanding how AfL practices enable students to take charge of their own learning. Additionally, utilizing personal development indicators for self-assessment introduces a tailored approach to education, fostering skills for lifelong learning and adaptability.

This review also points out the distinct challenges and opportunities present in the Indonesian educational landscape. Factors such as regional differences, cultural practices, and systemic limitations significantly affect the application and impact of AfL practices. However, successful case studies and pilot initiatives reveal that culturally relevant adjustments and efficient use of resources can surmount these challenges, ensuring that AfL makes a meaningful contribution to educational reform.



Link to Research Questions

The review directly addresses the research questions set forth in the introduction. Inquiry-based and discovery-based learning strategies improve educational results by promoting exploration, collaboration, and problem-solving, supported by both global and Indonesian research. AfL techniques, such as peer assessment and feedback mechanisms, align well with these educational approaches, offering ongoing support and guidance to learners.

Furthermore, using personal development indicators is notably effective in encouraging self-assessment and reflective practices, allowing students to track their progress and establish relevant goals. Together, these findings reinforce the promise of integrating AfL with inquiry-based learning to tackle educational challenges in Indonesia.

Future Research Areas

This review suggests several directions for future research. Longitudinal studies are necessary to assess the lasting impact of AfL on student success and personal growth. Comparative studies across various regions in Indonesia could lead to a better understanding of how local contexts and cultural influences affect the results of AfL practices.

Moreover, investigating the intersection of AfL with contemporary technologies, such as digital assessment tools and learning analytics, may present new opportunities for innovation in student-centered evaluation.

Table 3: Policy Recommendation

Policy Recommendation	Intended Outcome
Improved Teacher Training	Better Implementation of AfL Practices
Resource Distributions	Equal Opportunities Across Regions
Curriculum Inclusions	Alignment with Inquiry-based Methods

Suggestions for Policy

To maximize the advantages of AfL in Indonesian elementary schools, several policy suggestions are proposed in table 3:

a) Improved Teacher Training: Comprehensive professional development initiatives are needed to prepare teachers with the knowledge and skills to effectively implement AfL practices.

b) Resource Distribution: Funding for educational resources, including training materials, assessment tools, and necessary infrastructure, should be prioritized to aid in the implementation of AfL across various educational settings.



- c) Curriculum Inclusion: AfL principles should be incorporated into the national curriculum, accompanied by explicit guidelines and frameworks that align with inquiry based and discovery-based learning methodologies.
- d) Community Participation: Engaging parents, local communities, and stakeholders in the assessment process can create a supportive atmosphere for student learning and development.
- e) By addressing these recommendations, educators and policymakers can foster an environment conducive to the widespread implementation of AfL, ultimately transforming the educational framework in Indonesia.

Final Thoughts

This literature review emphasizes the transformative potential of AfL as a method for enhancing learning outcomes and nurturing a culture of reflective and autonomous learners. By integrating theoretical insights, empirical evidence, and contextual factors, it provides a comprehensive view of how AfL can be employed to meet the needs of Indonesian elementary schools. Moving ahead, collaboration among educators, researchers, and policymakers will be crucial to ensure AfL achieves its potential as a key element of educational innovation.

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Career Training as a Moderator of Employee Work Quality

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Submitted: 31/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This study aims to investigate the influence of co-worker support, extrinsic motivation, and career training on employee work quality in the Regional Government Organization (OPD) of Serang Regency. Additionally, the study examines the moderating role of career training in strengthening the relationship between extrinsic motivation and work quality.

Methods: The research involved 200 employees selected using a simple random sampling technique. Data was collected through online questionnaires and analysis using the Structural Equation Model on Partial Least Square (SEM-PLS) method.

Results: The results indicate that co-worker support, extrinsic motivation, and career training significantly influence work quality. Furthermore, the study reveals that career training acts as a moderator, strengthening the relationship between extrinsic motivation and work quality.

Conclusions These findings offer valuable insights into human resource management, emphasizing the importance of developing a collaborative culture, providing appropriate rewards, and regularly organizing career training to improve employee work quality.

Keywords:

Career Training, Co-worker Support, Work Quality, and Extrinsic Motivation.

1. Introduction

Government employees face various challenges, including policy dynamics, technological changes, and evolving societal needs. In this context, employee work quality is a key determinant of successful public service delivery. Good work quality reflects employees' ability to perform their duties effectively, efficiently, and accountably. This is crucial given the role of government institutions as the front line in meeting public needs and ensuring good governance (Faizah, 2022). However, real-world conditions reveal several challenges affecting employee work quality in government institutions, such as a lack of competence and skills, low work motivation, and limited self-development programs (Supriatna et al., 2023).

A preliminary study conducted in the Regional Government Organizations (OPD) of Serang Regency indicated that many employees still lack the technical and managerial competencies required to handle complex tasks. Some employees appear less motivated to work optimally, either due to a lack of recognition or an unsupportive work environment. Additionally, not all government institutions regularly conduct internal training to support employee career development. This phenomenon requires serious attention, as it is suspected to be one of the causes of



public complaints regarding service delays, lack of transparency, and work outcomes that do not meet established standards. This situation highlights the need for strategic management measures to enhance employee work quality in government institutions. Previous research suggests that career training can be an effective solution to address these issues. With the right training, employees can improve their competencies (Keomorakath & Fendy, 2021; Munawaroh et al., 2023), allowing them to contribute more significantly to the organization and society (Safitri et al., 2024). Furthermore, co-worker support and extrinsic motivation have also been studied as interconnected factors in creating a productive work environment (Faizah, 2022; Shin et al., 2020), which in turn improves employee work quality (Setya et al., 2024). This article aims to examine the role of career training as a moderator in enhancing work quality, influenced by co-worker support and extrinsic motivation, with a study focused on OPD across Serang Regency.

2. Literature Review

Co-worker Support and Employee Work Quality

Co-worker support plays a crucial role in creating a productive work environment (Shin et al., 2020). This support can be emotional, such as providing encouragement during challenges, or instrumental, such as sharing information or assisting with tasks. Previous research has shown a significant relationship between co-worker support and employee work quality. For example, a study by Singh et al., (2019) found that co-worker support positively influences employee work quality in the public sector. The study revealed that employees who feel supported by their colleagues experience increased productivity, task completion ability, and job satisfaction. Additionally, research by Herawati et al., (2023) confirmed that co-worker support enhances employees' confidence and commitment, ultimately improving work quality. This effect is particularly evident in workplaces that prioritize collaboration and effective communication among employees.

Co-worker Support and Extrinsic Motivation

Co-worker support also significantly influences extrinsic motivation (Syawal et al., 2023). Extrinsic motivation refers to work drive that stems from external factors, such as rewards, recognition, or incentives (Sihabudin, 2021). When employees feel supported by their colleagues, they are more motivated to achieve the organization's desired outcomes. Research by Menhard et al., (2022) demonstrated that co-worker support enhances extrinsic motivation by fostering a sense of camaraderie and collegiality. Their findings indicated that employees who feel supported by co-workers are more likely to strive toward work targets because they perceive their work environment as conducive and appreciative. Furthermore, a study by Kurniawan & Naeni (2021) found that co-worker support contributes to increased intrinsic and extrinsic recognition. When colleagues provide technical assistance or emotional motivation, employees feel more valued and driven to achieve better results.



Extrinsic Motivation and Employee Work Quality

Extrinsic motivation plays a significant role in determining employee work quality. This motivation includes factors such as salary, bonuses, rewards, and organizational recognition. Employees who are motivated by external incentives tend to work harder to meet established performance targets. Research by Djunaid (2023) indicated that extrinsic motivation positively impacts employee work quality. Their study found that employees who receive adequate external rewards demonstrate improvements in productivity, punctuality, and adherence to work standards. Additionally, research by Purnomo et al., (2023) revealed that financial incentives, such as bonuses and salary increases, enhance employee commitment to the organization, ultimately leading to better work quality. These findings highlight the importance of fair and appropriate rewards that align with employee contributions (Nuzula et al., 2021).

Career Training as a Moderator Between Extrinsic Motivation and Work Quality

Career training acts as a moderating factor that strengthens the relationship between extrinsic motivation and work quality. This training aims to improve employees' competencies, knowledge, and confidence, enabling them to apply external incentives toward high-quality work outcomes. Research by Fitriyani et al., (2024) found that career training moderates the relationship between extrinsic motivation and work quality. Their study demonstrated that employees who participate in career training develop a better understanding of their roles and responsibilities, allowing them to optimize received incentives into productive work results. Additionally, research by Turachma & Hendarsjah (2021) emphasized that career training provides additional benefits in the form of increased efficiency and work effectiveness. Employees who are motivated by external rewards and receive career training support are better able to achieve work results that meet or even exceed organizational standards.

3. Theoretical Framework

Co-worker support

Co-worker support is a form of social support provided by colleagues in the workplace. This support can be emotional, instrumental, or informational, helping individual complete tasks and overcome challenges at work. According to Kurniawan & Naeni (2021), co-worker support is defined as employees' willingness to assist each other in completing tasks, including cooperation, support, and mutual respect. Another study as Lasisi et al., (2020) stated that co-worker support forms the foundation for employees to contribute to the organization. The findings indicated that co-worker support positively affects job satisfaction. Additionally, co-worker support plays a role in enhancing employees' psychological well-being. Overall, co-worker support plays a crucial role in fostering a positive work environment, increasing job satisfaction, and promoting employee well-being.



Extrinsic Motivation

Extrinsic motivation is motivation derived from external sources, such as rewards, praise, or other incentives provided by others or the surrounding environment (Riyanto et al., 2021). Extrinsic motivation is anything obtained through personal observation or through suggestions, recommendations, or encouragement from others (Geopani et al., 2024). Extrinsic motivation is a work drive that originates outside the employee as an individual, requiring them to perform their job optimally (Rivai et al., 2018). Based on these definitions, extrinsic motivation can be concluded as a drive stemming from external factors that encourage individuals to take action, such as rewards, praise, or other incentives provided by others or the surrounding environment.

Work Quality

Work quality is a process where an organization evaluates or assesses work performance carried out effectively, orderly, and correctly, which helps improve work motivation and organizational loyalty among employees (Muhdar, 2022). Work quality refers to the quality of work demonstrated by employees in providing their best performance for the organization (Nur Susanto et al., 2023). Work quality is a measurable outcome based on the effectiveness and efficiency of tasks performed by human or other resources in achieving organizational goals efficiently (Anwar & Graham, 2021). Based on these definitions, work quality is related to the effectiveness and efficiency in carrying out tasks and employees' ability to provide their best performance for the organization.

Career Training

Career training, or education and training for career development, is a systematic effort designed to improve employees' competencies and performance in achieving their desired career progression. Career development is the process of enhancing an individual's work skills to achieve the desired career (Wahyudi et al., 2021). Career development is an effort to improve employees' technical, theoretical, conceptual, and moral capabilities in accordance with job requirements through education and training (Nor et al., 2023). Training is a process where individuals acquire specific skills to help achieve organizational goals (Ikhsania Putri & Sukmana, 2023). Based on these definitions, career training aims to improve employees' competencies through education and training, enabling them to reach their career goals and contribute optimally to the organization.

4. Methods

This research falls under causal research, aims to explain cause-and-effect relationships between several concepts, variables, or strategies developed in management (Ferdinand, 2019). This study analysis the role of career training in moderating work quality, influenced by co-worker support and extrinsic motivation. The research was conducted on employees in Regional Government Organizations (OPD) in Serang Regency, with a total sample size determined as 10×20 indicators, amounting to 200 respondents. The sample was selected using a simple random sampling method (Hair et al., 2015). Data collection was carried out through a Google

Form survey, and the data were analysis using the Structural Equation Model Partial Least Squares (SEM-PLS) method. Conceptually, SEM-PLS functions similarly to multiple linear regression by maximizing the explained variance in endogenous latent variables (dependent variables) while also assessing data quality based on measurement model characteristics (Ghozali & Latan, 2018).

5. Results and Discussions

Measurement Model Testing

The measurement model test aims to determine whether all indicators used in this study are valid and reliable in measuring the intended variables. Three criteria must be met in this test: convergent validity, discriminant validity, and construct reliability (Ghozali, 2019). The measurement model test results show:

1. Co-worker support had outer loading values ranging from 0.707 to 0.865, with a p-value of 0.000.
2. Extrinsic motivation had outer loading values ranging from 0.766 to 0.935, with a p-value of 0.000.
3. Work quality had outer loading values ranging from 0.712 to 0.920, with a p-value of 0.000.
4. Career training had outer loading values ranging from 0.762 to 0.897, with a p-value of 0.000.

According to Ghozali (2019), an indicator meets convergent validity if the outer loading value is greater than 0.7. Referring to this, the measurement model test results in Table 4.4 are deemed entirely valid, as the lowest outer loading value obtained is 0.707 (KPG2) > 0.7 . Thus, the following measurement model estimation can be constructed:

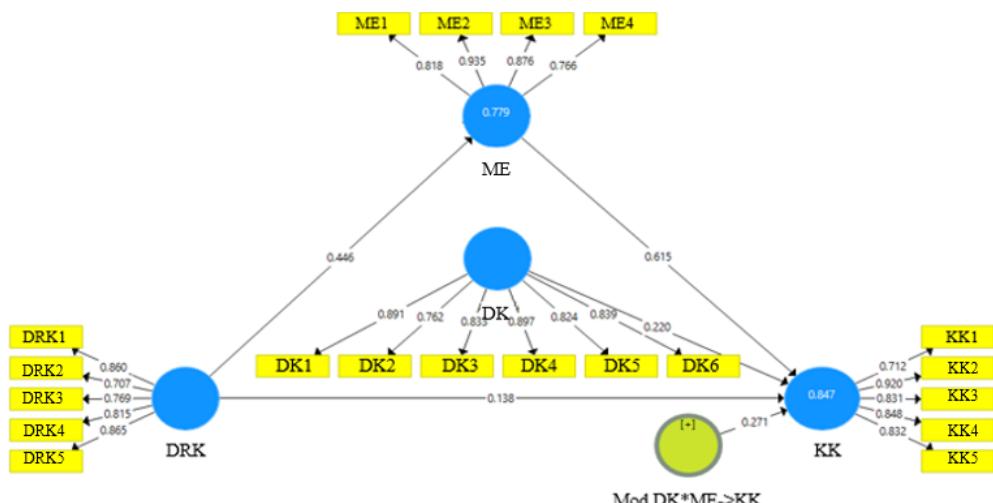


Figure 1. Measurement Model Test Results

Source: processed primary data, 2024.



From figure 1, it can be observed that all measured indicators have an outer loading > 0.7 . Thus, the measurement model is confirmed to meet the assumption of convergent validity.

Structural Model Test Results

The structural model test in this study was conducted to determine the strength of relationships (causality) between variables and the ability of each exogenous latent variable to influence the endogenous latent variable. The structural model test results can be assessed based on two criteria: R-Square values and Path Coefficient values in the inner research model. The results of the structural model test are presented below:

Table 1: R-Square

Variable	R Square
Extrinsic motivation	0,779
Work quality	0,847

According to the data in the table 1, the R-Square value for extrinsic motivation is 0.779. Extrinsic motivation in the structural model is influenced by co-worker support and career training. This result shows that co-worker support accounts for 77.9% ($0.779 \times 100\%$) of the variance in extrinsic motivation. The R-Square value for work quality is 0.847. In this structural model, work quality is influenced by the variables of co-worker support, extrinsic motivation, and career training. This result indicates that co-worker support, extrinsic motivation, and career training together explain 84.7% ($0.847 \times 100\%$) of the variance in work quality.

To observe the magnitude and direction of the relationships between the variables tested in the hypotheses, the path coefficient values are presented as in table 2.

Table 2: Path Coefficient

Hypothesis		Path coefficient	P Values	Results
1	DRK -> KK	0,138	0,035	Positive (+)
2	DRK -> ME	0,446	0,000	Positive (+)
3	ME -> KK	0,615	0,000	Positive (+)
4	Mod DK*ME -> KKK	0,271	0,000	Negative (-)

The path coefficient for DRK -> KK is 0.138 with a p-value of 0.035 and a positive direction of the relationship. This result indicates that co-worker support has a positive relationship with work quality. If the value of co-worker support increases by 1 unit, it will result in an increase in work quality by 0.138 units. Similarly, if the value of co-worker support decreases, the value of work quality will also decrease.

The path coefficient for DRK -> ME is 0.446 with a p-value of 0.000 and a positive direction of the relationship. This result indicates that co-worker support has a positive relationship with extrinsic motivation. If the value of co-worker support increases by 1 unit, it will result in an increase in extrinsic motivation by 0.446 units. Similarly, if the value of co-worker support decreases, the value of extrinsic motivation will also decrease.



The path coefficient for ME \rightarrow KK is 0.615 with a p-value of 0.000 and a positive direction of the relationship. This result indicates that extrinsic motivation has a positive relationship with work quality. If the value of extrinsic motivation increases by 1 unit, it will result in an increase in work quality by 0.615 units. Similarly, if the value of extrinsic motivation decreases, the value of work quality will also decrease.

The path coefficient for Mode DK*ME \rightarrow KK is 0.271 with a p-value of 0.000 and a negative direction of the relationship. This result indicates that the interaction between extrinsic motivation and career training has a positive relationship with work quality. If the value of career training increases by 1 unit, it will increase the relationship between extrinsic motivation and work quality by 0.271 units. Conversely, if the value of career training decreases, the relationship between extrinsic motivation and work quality will decrease.

Hypothesis Testing Results

The hypothesis testing in this study is based on the original sample values, t-statistics, and p-values from bootstrapping tests, and compared with the t-table value of 1.960 at a 5% significance level (two-tailed test). The following presents the hypothesis testing results:

Table 3: Hypothesis Testing Results

	Hypothesis	Original sample	t statistics	P Values	Results
1	DRK \rightarrow KK	0,138	2,136	0,035	Accepted, Positive (+)
2	DRK \rightarrow ME	0,446	10,794	0,000	Accepted, Positive (+)
3	ME \rightarrow KK	0,615	5,087	0,000	Accepted, Positive (+)
4	Mod DK*ME \rightarrow KKK	0,271	6,440	0,000	Accepted, Positive (+)

Hypothesis 1: Co-worker Support on Work Quality

Based on the data in the table, hypothesis 1 DRK \rightarrow KK obtained an original sample value of (0.138); t-statistic (2.136) and p-value (0.035). The t-statistic value (2.136) $>$ t-table (1.960) and p-value (0.035) $<$ sig (0.05) indicates that the result is accepted with a positive statement. This means that co-worker support tends to have a significant positive impact on work quality. In this study, co-worker support was found to have a positive and significant effect on work quality.



Hypothesis 2: Co-worker Support on Extrinsic Motivation

Hypothesis 2 DRK -> ME obtained an original sample value of (0.446); t-statistic (10.794) and p-value (0.000). The t-statistic value (10.794) > t-table (1.960) and p-value (0.000) < sig (0.05) indicates that the result is accepted with a positive statement. This result means that the hypothesis stating that co-worker support has a positive and significant effect on extrinsic motivation is supported.

Hypothesis 3: Extrinsic Motivation on Work Quality

Based on the data in the table, hypothesis 3 ME -> KK obtained an original sample value of (0.615); t-statistic (5.087) and p-value (0.000). The t-statistic value (5.087) > t-table (1.960) and p-value (0.000) < sig (0.05) indicates that the result is accepted with a positive statement. This result means that extrinsic motivation has been proven to have a positive and significant impact on work quality. Thus, this study has proven the existence of a positive and significant effect of extrinsic motivation on work quality.

Hypothesis 4: Career Training Moderation in the Relationship Between Co-worker Support and Work Quality

Based on the data in the table, hypothesis 4 Mod DK*ME -> KK obtained an original sample value of (-0.271); t-statistic (6.440) and p-value (0.000). The t-statistic value (6.440) > t-table (1.960) and p-value (0.000) < sig (0.05) indicates that the result is accepted. This result means that the hypothesis stating the presence of a positive moderation of career training in the relationship between co-worker support and work quality is supported. Thus, in this study, career training has been proven to strengthen the relationship between co-worker support and work quality.

6. Conclusion

From the results of the research and discussion that have been outlined, it can be concluded that work quality is significantly influenced by co-worker support, extrinsic motivation, and career training. This study also proves the moderation of career training in strengthening the relationship between extrinsic motivation and work quality. Therefore, future research is expected to provide broader and more comprehensive results by involving other variables that have not been studied in order to improve employees' work quality. Organizations are also expected to build a collaborative work culture, develop a fair reward system, and regularly hold career training to maximize the benefits of co-worker support, extrinsic motivation, and career training.



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The Relationship Between Self-efficacy and Self-regulated Learning: A Review

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Submitted: 31/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: The relationship between self-efficacy and self-regulated learning (SRL) in an educational setting is reviewed in this study. A key factor in encouraging and maintaining participation in the learning process is self-efficacy, or the conviction that one can accomplish a specific objective. In contrast, SRL includes techniques like goal-setting, self-monitoring, and self-reflection that students employ to control their educational experiences

Methods: In order to determine how high self-efficacy can improve the SRL process and how mastery of SRL tactics can reinforce self-efficacy beliefs, this study examines the body of existing literature.

Results: The review's findings point to a reciprocal relationship between these two ideas, with successful SRL implementation boosting self-efficacy and higher self-efficacy resulting in more successful SRL strategy implementation.

Conclusions: Designing educational interventions to enhance students' learning results and academic motivation requires an understanding of these relationships.

Keywords:

self-efficacy, self-regulated learning, educational

1. Introduction

Comprehending the relationship between self-efficacy and self-regulated learning is essential for improving educational results and promoting lifelong learning competencies. Self-efficacy, the belief in one's capacity to perform actions required to achieve particular outcomes, is crucial in influencing motivation and persistence in learning activities. In contrast, self-regulated learning involves the techniques and strategies that learners utilise to manage their own educational experiences, such as goal planning, self-monitoring, and self-reflection. This introductory overview seeks to examine the complex relationship between these two constructs, as they profoundly affect an individual's learning and achievement strategies. This essay will analyse existing literature to demonstrate how elevated self-efficacy enhances self-regulated learning processes and, conversely, how mastery of self-regulation can bolster self-efficacy beliefs, thereby establishing a reciprocal cycle of improvement advantageous to learners across various contexts.



Self-regulated learning (SRL) and self-efficacy are two interconnected conceptions that are essential in educational psychology. Self-Regulated Learning (SRL) denotes the mechanism by which learners autonomously manage their educational experiences via goal formulation, self-assessment, and introspection. Self-efficacy is the conviction in one's skills to perform the necessary steps to navigate future circumstances. Understanding the relationship between these two constructs helps improve our support for learners in their educational pursuits.

Comprehending self-efficacy and self-regulated learning is crucial in educational psychology, as both ideas significantly interact to affect academic achievement. Self-efficacy denotes an individual's conviction in their capacity to perform activities and achieve particular objectives, influencing motivation and conduct. Conversely, self-regulated learning encompasses the mechanisms by which students establish objectives, assess their advancement, and contemplate their educational experiences. Studies demonstrate that individuals possessing elevated self-efficacy are more inclined to utilise self-regulated learning mechanisms, hence improving their academic performance. A study involving GCE A-level students shown that motivation and reflection enhance self-regulation, indicating that these factors are affected by students' perceived competencies and apprehensions over failure (Stoten, et al., 2015).

Self-efficacy serves as a motivational catalyst in self-regulated learning, acting as a crucial factor within social cognitive theory and profoundly influencing performance, persistence, learning, and effort (Lim, S.L., & Yeo, K.J., 2021). It affects the decisions individuals make, the effort they invest in their pursuits, and the results they anticipate (Gan, Z., Liu, F., & Yang, C.C., 2020). Beliefs in self-efficacy generally originate from four primary sources: mastery experiences, vicarious experiences, verbal persuasion, and physiological conditions (Blackmore et al., 2021). Self-efficacy significantly influences academic performance. Elevated self-efficacy correlates with the pursuit of mastery and performance-oriented goals, which are connected with improved academic results (Putarek, V., & Bernardic, N.P., 209). In STEM disciplines, self-efficacy is substantially correlated with academic success and perseverance (Blackmore et al., 2021). This review aimed to elucidate the correlation between self-efficacy and self-regulated learning as evidenced by prior research.

2. Literature Review

Self-efficacy

Self-efficacy is a psychological concept that denotes an individual's confidence in their capacity to effectively execute and coordinate the actions necessary to attain particular objectives. This concept is grounded in Bandura's socio-cognitive theory and has been extensively examined across multiple fields, including education, psychology, and behavioural sciences. Comprehending self-efficacy necessitates examining its definition, assessment, and ramifications for learning and performance.

Self-efficacy is the conviction in one's ability to organise and implement actions necessary to achieve specific outcomes; it represents a self-assessment of one's competence to master or complete a task, affecting effort, task selection, persistence, resilience, and success (Becirovic, S. et al., 2022). Self-efficacy assessments are contingent upon context and may fluctuate based on variables such as the topic, the



characteristics of the task, and the evaluation criteria of the audience (Becirovic, S et al., 2022).

Self-efficacy assessments in educational settings may include enquiries regarding certain competencies, such as writing or public speaking, and assess your confidence in various aspects of these activities (Bai, B et al., 2020). Numerous research studies, primarily in writing, have examined the multifaceted structure of self-efficacy, identifying components such as linguistic self-efficacy, performance self-efficacy, and self-regulatory efficacy (Teng, L.S., 2021). We employ the Motivated Strategies for Learning Questionnaire (MSLQ) and other tailored scales to assess individuals' self-confidence in certain domains, such as their capacity to learn online or in educational settings (Becirovic, S et al., 2022; Bruinsma, M.F et al., 2020).

Self-efficacy beliefs significantly influence the utilisation of self-regulated learning (SRL) methods, which are crucial for academic success and encompass activities such as planning, monitoring, and revising. Bai et al. (2020) and Teng (2021) assert that elevated self-efficacy correlates with increased intrinsic interest, goal-setting, and task commitment, resulting in improved academic performance (Teng, 2021). Self-efficacy interacts with intrinsic motivating factors such as task value and intrinsic goal orientation to enhance the application of cognitive and metacognitive methods in educational contexts (Teng, L.S., 2021).

In conclusion, self-efficacy is a crucial construct that influences learning and performance across multiple domains. The measuring of motivation using specialised scales and its impact on learning processes underscores its significance in educational contexts. Future research may further investigate the multifaceted character of self-efficacy and its significance in various cultural and environmental environments.

Self-regulated Learning

Self-regulated learning (SRL) is an essential educational concept that underscores learners' capacity to oversee their own learning processes. It entails establishing objectives, tracking advancement, and modifying tactics to attain intended results. Self-regulated learning (SRL) is defined as an active and constructive process in which learners establish goals and endeavour to oversee and control their cognition, motivation, and behaviour (Roick, J., & Ringen, T., 2018). It demonstrates learners' autonomy and intrinsic motivation in selecting their objectives and methodologies (Ulya, Z et al., 2022).

Assessment of Self-Regulated Learning The Motivated techniques for Learning Questionnaire (MSLQ) is a widely utilised instrument that assesses self-regulation and various learning techniques (Rismayanti et al., 2023). Research frequently utilises correlational approaches to examine the relationship between self-regulated learning and other variables, such as self-development, demonstrating a robust correlation (Rismayanti et al., 2023).



Theoretical Framework

Comprehending the theoretical framework that connects self-efficacy and self-regulated learning (SRL) is essential for elucidating their interrelationship. Self-efficacy, based on Bandura's social cognitive theory, asserts that individuals' beliefs about their skills profoundly affect their motivation and learning processes. This conviction is especially crucial in self-regulated learning, wherein students engage actively in their education via goal-setting and self-reflection. The research indicates that motivational elements such as self-efficacy and goal orientation significantly influence skill development, highlighting a reciprocal relationship between these concepts (Degrez et al., 2009). Furthermore, data from classroom studies indicates that educators can foster an environment conducive to self-regulated learning (SRL) by promoting practices that enhance students' self-efficacy. This establishes a cycle of constructive interaction and scholarly achievement (Peel et al., 2020). This theoretical framework enhances our comprehension of student learning processes and offers useful insights for instructional tactics in educational contexts.

The relationship between self-efficacy and self-regulated learning is extensively documented in educational psychology, with theories continually emphasising how an individual's confidence in their abilities affect their learning processes. Self-efficacy influences both the effort a student is prepared to invest and their methodology in confronting problems and employing learning tactics. This is especially apparent in higher education, as students face complex academic requirements that need proficient self-regulation. Upon further examination of this connection, it is evident that concepts such as academic control beliefs and student self-evaluation significantly enhance self-regulated learning (Cassidy et al., 2011). A study examining students' approaches to history and geography revealed that these attitudes directly influence motivation and reflection, which are crucial in determining how perceived success impacts subsequent learning (Stoten et al., 2015). Consequently, comprehending self-efficacy establishes an essential basis for enhancing self-regulated learning behaviours.

3. Methods

A comprehensive search was conducted utilizing multiple databases, including SAGE Journals, Scopus, Taylor & Francis, ERIC, and Elsevier. The comprehensive literature research approach is encapsulated in Figure 1, including the utilized keywords, applied conditions, and the phases of the screening procedure.

Moreover, inclusion criteria were set for this review. Only articles published between 2014 and 2024 will be examined to reflect the most recent research trends. Only research examining the correlation between self-efficacy and self-regulated learning will be included. Finally, this evaluation will only evaluate published articles, journals, proceedings, or conference papers.

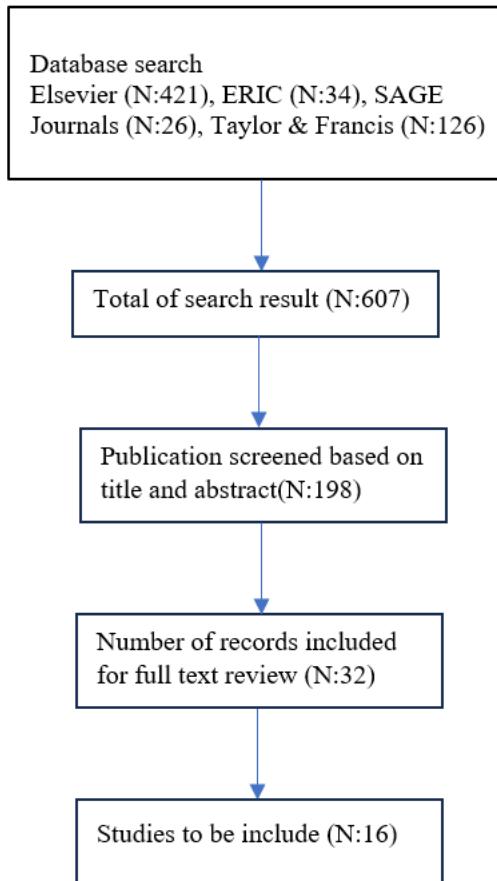


Figure 1: Process of literature review

4. Results and Discussion

Academic performance and motivation are significantly influenced by the closely related concepts of self-efficacy and self-regulated learning (SRL). While self-regulated learning entails actively managing one's learning processes through goal-setting, self-monitoring, and self-reflection, self-efficacy is the belief in one's own ability to carry out activities and accomplish goals. Gaining knowledge about the connection between these two concepts will help students improve their learning results.

The Role of Self-Efficacy in Self-Regulated Learning

Self-efficacy is the conviction that one can plan and carry out the actions necessary to handle future circumstances (Yerdelen, S. et al., 2016; Teng, L.S., 2021). It plays a crucial role in SRL, impacting learning techniques, motivation, and perseverance (Teng, L.S., 2021).

Effective learning techniques including goal-setting, self-monitoring, and strategic planning are linked to high self-efficacy (Putarek, V., & Bernardic, N.P., 2019; Teng, L.S., 2021). Setting difficult objectives and sticking to assignments are two examples of self-regulatory behaviours that students with high self-efficacy are more likely to exhibit (Teng, L.S., 2021).



Self-Regulated Learning and Academic Performance

To assist students take charge of their learning, SRL incorporates cognitive, metacognitive, and motivational techniques (Teng, L.S., 2021). To succeed academically, it entails establishing objectives, tracking advancement, and modifying tactics (Hill, J. et al., 2019; Alegre, A.A., 2014). Because they can successfully govern their learning processes, self-regulated learners typically perform better academically (Alegre, A.A., 2014). Students that employ SRL techniques are more proactive and involved in their education, which is associated with improved academic results (Hill et al., 2019; Alegre, A.A., 2014).

Interplay between Self-Efficacy and SRL

SRL and self-efficacy are mutually reinforcing; effective self-regulation can increase self-efficacy, and high self-efficacy increases the employment of SRL tactics (Putarek, V., & Bernardic, N.P., 2019; Teng, L.S., 2021). Strong self-efficacy beliefs increase the likelihood that students will use SRL methods, which can boost self-efficacy and academic achievement (Alegre, A.A., 2014; Teng, L.S., 2021).

Self-efficacy influences cognitive, metacognitive, and motivational regulation techniques and is a powerful predictor of SRL method use (Teng, L.S., 2021). The successful implementation of SRL methods, which have a favourable impact on learning outcomes, depends on having confidence in one's capacity for self-regulation (Teng, L.S., 2021).

5. Conclusion

The relationship between self-efficacy and self-regulated learning emphasises how critical it is to support these abilities in learning environments. Enhancing students' self-efficacy and self-regulation through interventions may result in better academic performance. To develop targeted strategies to support students from diverse backgrounds, future study should examine how these concepts evolve in various cultural and educational contexts.

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A Case Study on Volunteer Motivation in Faith Based Organization in Penang Using Maslow and Vroom's Motivation Theory

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Submitted: 28/01/2025 | Revision Accepted: 31/01/2025 | Online: 08/08/2025

Abstract:

Purpose: This paper is based on research centered on volunteer motivations in a faith-based organization in Penang, Malaysia.

Methods: The research design used a qualitative case-study methodology with individual interviews of volunteers and the findings then triangulated with focus groups. Theories linked to volunteer motivations in this study were Maslow's Hierarchy of Needs and Vroom's Expectancy Theory of Motivation.

Results: The outcome of this study has added further value and credence to the theories of Maslow and Vroom through the in-depth interviews. Practical significance would be helping leaders of volunteers better understand the motivations of their teams, coupled with their challenges. In addition, the study also presented some findings related to better retention of current volunteers and recruiting new individuals.

Conclusions: The primary factors that motivate volunteers in a faith-based organization are fulfilling one's inner passions, using one's unique gifts and talents, helping others, making things better and being closer to the community.

Keywords:

Faith-based organizations, UN Sustainable Development Goals, Volunteer Motivations, Vroom's Theory of Expectancy, Maslow's Hierarchy of Needs, Spiritual Capital.

1. Introduction

Volunteerism is a global phenomenon that transcends boundaries, religions, and cultural divides. Volunteers embody the fundamental values of commitment, inclusiveness, civic engagement, and a sense of solidarity. The newly adopted Sustainable Development Goals offer another opportunity for individuals to show solidarity through volunteerism."

(UN Secretary-General, Ban Ki-Moon, International Volunteer Day, Dec 5, 2015)

In 2015 the United Nations drafted out seventeen audacious goals for sustainability entitled the Sustainable Development Agenda 2030. These goals are intended to tackle a wide variety of the world's challenges such as poverty, hunger, health, education, gender inequality, water, sanitation, energy, environmental problems, and social justice by 2030. (Tomalin et al., 2019). These goals were developed after surveying



about seven million people globally. Integral to the success of these goals is the engagement of citizens through volunteer programs. (Saz-Gil et al., 2020). Volunteerism is the principle of donating time and energy towards a greater cause. Volunteers help change the lives of those in their community as a social responsibility rather than receiving a financial reward. Eighty percent of charitable organizations and one-third of all non-profits partner with religious organizations. Eighty-four percent of the world's population is affiliated with a religion. (Ives & Kidwell, 2019) This thus makes the engagement of volunteers associated with a religious organization a critical area to study and understand.

This is in stark contrast to the humanitarian crisis that is ravaging the world. The military actions causing civilian injury and death in Sudan, Ukraine, and, most recently, Gaza, over the past year have been deeply shocking. Sudan is now suffering the world's largest displacement crisis, with 7.1 million people forced from their homes. In Ukraine, more than 17 million people—half the population—now need humanitarian assistance and protection. In Gaza, at the time of writing, the reported number of deaths has surpassed 15 000 individuals, and more than 41 000 people have been injured, 70% of whom are women and children. Many people, including health-care workers, are unaccounted for, (Homer, 2024). It was also documented that during the COVID-19 pandemic that ravaged the world from 2020 to 2021, volunteer levels decreased substantially ranging anywhere from 15% to 25%. (Dederichs, 2022). These volunteer drops were also disproportionate as they impacted females and the elderly more, which typically are the greater sources of volunteers, being retirees or homemakers. Many of these volunteers stopped their services even after the pandemic had ended. (Biddle et al., 2020). The religion and faith-based sector faced significant operational challenges because of public health measures meant to stop the spread of COVID-19. Religious charities, faith-based organizations, and communities of faith faced big shifts in the way they engage with individuals due to physical distancing and capacity restrictions. They also faced significant financial pressure from decreasing charitable donations, workforce and volunteer challenges (ItzhakiBraun, 2021).

This further underscores the importance of the work being done by volunteer organizations to help solve the world's problems through the sustainable development goals.

The research questions that this paper attempts to answer are.

- i. What are the key factors that motivates parishioners to volunteer their time and services at a faith-based organization?
- ii. What are the rewards these volunteers derive from their volunteerism?
- iii. What are the challenges and barriers these volunteers face in their endeavours?

The problem statement being investigated in this study centers around what are the strategies a faith-based organization can employ to attract, engage, motivate and retain their volunteer teams within an environment where the volunteers are not compensated and thus perform their duties purely for other intrinsic rewards.

Two theories were examined for their relevance in volunteer motivations. Maslow's hierarchy of needs outlines that a human being's basic needs of physiological and



safety must be addressed first before an individual can think about moving on to activities that promote belonging, esteem, and self-actualization. (Dederichs, 2022) This could also explain why so many faith-based organizations have large numbers of retirees and homemakers within their ranks as this category of volunteers seek esteem and self-actualization outside of traditional professional work activities. It also provides some insight into why most people who participate in volunteer work come from the middle and upper classes in society as they would have satisfied their physiological and safety needs. They are then able to move on to the next phase of gaining self-actualization through volunteering. (Anderson et al., 2019). Motivation increases as self-actualization needs are met.



Figure 1: Maslows Hierarchy of Needs (Source - Anderson et al, 2019)

Maslow's Hierarchy of Needs was selected as a theoretical basis for understanding an individual's motivation to volunteer as volunteering helps one to achieve self-actualization or fulfilment through the act of being of service to others, experiencing inner peace by helping others, attaining blessings by doing God's will, feeling useful and creating a sense of belonging. (Anderson et al., 2019). Individuals who cannot achieve their basic physiological needs may thus be unable to volunteer to satisfy their higher-level needs (Wood & Wood, 2021a). People who are preoccupied with the day-to-day ordeals of meeting their basic physiological and safety needs would likely exhibit a lower potential motivation for volunteering (Anderson et al., 2019). It would be the intent of this research to validate these postulations through the process of interviewing actual volunteers

Vroom's Expectancy Theory identifies the basis of behaviours that result from sensible choices amongst alternatives, where the purpose remains to maximize pleasure and minimize pain. (Zboja et al., 2019) Vroom postulated that effort and performance are linked to motivation.

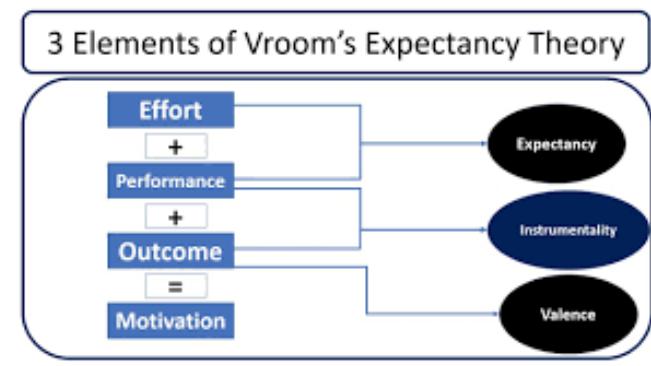


Figure 2: Vroom's Theory of Expectancy (Source - Rochester, 2019)

According to the expectancy theory, for one to be motivated, an individual must believe that a certain level of effort leads to performance (expectancy), that performance leads to rewards (instrumentality), and the rewards received outweigh the costs associated with the effort (valence). (Ashfaq et al., 2020)

- a) Expectancy: The belief that better performance is linked with increased motivation. According to Vroom, the motivation of a person depends on the extent of his or her beliefs that efforts will attract acceptable performance.
- b) Instrumentality: The belief that a valued outcome will follow upon performing well and that performance will attract rewards.
- c) Valence: The association of value assigned by the individual to the outcome. Vroom defined it as ". the affective orientation toward outcomes."

Unlike profit-oriented organizations that seek to motivate their employees via monetary rewards, nonprofit organizations must strive to provide alternate forms of job enrichment such as verbal rewards, performance rewards, satisfaction, and impact. In a past study, the main reasons for serving in faith-based non-profit organizations were related to faith and belief systems, coupled with serving the community (Bassous, 2015a). This study also served to illustrate that Vroom's Theory could be used in settings that were not purely profit oriented where employees are motivated by capital rewards such as money and benefits.

Vroom's Expectancy Theory of Motivation has been used and validated across several settings that examined motivations of participants for a variety of reasons. One of the articles most related was in charitable organizations and the nature of this study had direct correlation to the current study in this paper for the researchers' goals. (Zboja et al., 2019)



Social Enterprises and Faith-Based Organizations

A social enterprise is essentially a non-government organization that utilizes a market based approach to address societies issues such as education, poverty and hunger (Littlewood et al., 2017). These institutions came into play as a complementary role to traditional government and sit between traditional for-profit and traditional non-profit. Traditional nonprofits undertake commercial activities that generate value to fund social programs but whose main motive is mission accomplished to fulfil their stake-holders mandates (Sun et al., 2019). Examples of traditional non-profits would be tuition-funded non-profit schools. Members of religious organizations that perform external outreach programs involving volunteers, and are a subset of these social enterprise organizations, typically have a volunteer rate that is higher, and need volunteers to sustain their own service programs (Littlewood et al., 2017). It was also found that religious participation has been linked with the likelihood of volunteering by the fact that volunteers score much higher than non-volunteers when their measures of individual faith were tested (Garland et.al., 2008). This thus makes social enterprises and in turn religious organizations a key source of support to achieve the UN SDG goals.

Spiritual Capital

Several studies have examined the link between one's spiritual capital and willingness to volunteer. Denning asserted that faith as performed in people's daily lives and faith-based organisations had an impact because volunteering was a way for people to act out their faith (Denning, 2021). To understand volunteers' persistence, the study utilized affect theory to draw out from their faith-based narratives how volunteers are affected by their experiences, how volunteering could mean more to volunteers than what was represented, and how fleeting moments could be as significant as ongoing experiences (Denning, 2021). Volunteering provides individuals opportunities for developing and strengthening their instincts, talents, and abilities Martinez (Martinez et al., 2009) acknowledged that there are numerous spiritual capital assets; however, they focused on five specific elements of spiritual capital, which were, spiritual sensitivity, leadership, survival, outreach and motivation.

Butt (Butt et al., 2017) had identified motivation factors such as affiliation, beliefs, career, and development and furthering one's ego as primary motivations. Barriers centred around competing interests(Hansen & Slagsvold, 2020), time and family commitments, a lack of support, not being invited, not appreciated, and health issues(Kritz et al., 2021).

While the literature has highlighted many of the issues and changes facing social enterprises and faith-based organizations with declining volunteers post the pandemic, there is a gap in providing specific solutions to these organizations on how best to attract, motivate and retain volunteers. These solutions should take the form of actionable ideas and specific plans to address the problem. Much of the literature also looked at motivations, rewards and challenges discreetly versus examining them holistically within a single organization with the same group of participants.

This proposal intends to add value to the literature on studying volunteer motivations, rewards, barriers, and challenges in the post pandemic world within a faith-based organization.

Theoretical / Conceptual Framework

The theoretical framework utilized two theories related to volunteer motivations and their rewards experienced as an outcome of their volunteer actions. These were Maslows' Hierarchy of Needs and Vroom's Theory of Expectancy.

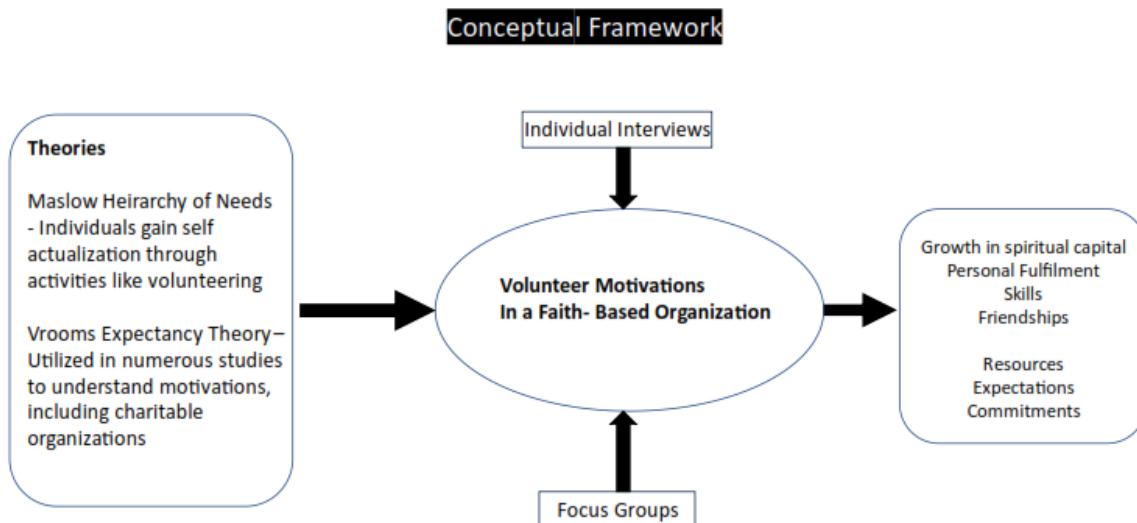


Figure 3: Conceptual Framework

The conceptual framework for this research as pictured in Figure 3 utilizes two theories, Vroom's Expectancy Theory and Maslow's Hierarchy of Needs as a basis to supplement the available academic literature and add further value, by examining volunteer motivations in a faith-based organization post the pandemic. The factors to be examined in relationship to the two theories relate to the design of the questions and how the volunteers can relate to the concepts of self-actualization, valence, instrumentality, and expectancy in their efforts. The research design intends to use Clary's Volunteer Functions Inventory and its six core areas and past dissertations as a guide for the design of the interview questions in addition to the two theories above. The framework utilized questions from the in-depth interviews to validate the theories by seeking volunteer opinions on how volunteering fit in with their own hierarchy of needs as well as their own rewards and benefits experienced.

2. Methods

The research methodology selected was a qualitative case study. This method was preferred over a quantitative approach as the nature of the questions required in-depth answers and interpretation that would require further probing or qualification. This was to best gain an understanding of the experiences of those who have volunteered. This helps recognize the value of participants' unique viewpoints that can only be understood within the context of their experiences (Castleberry & Nolen, 2018). The approach also allows the researcher to allow for ideas and thoughts that may not have been part of the original design to surface. This approach allows for the use of multiple tools such as open-ended questionnaires, focus groups, one-to one



interviews and direct observations at meetings and events. (Mwita, 2022). Missing information could also be validated by recounting inputs from interviewees, which is not possible in a quantitative approach.

The case study organization selected for the qualitative study was the Church of Divine Mercy in Sg Ara, Bayan Lepas, Penang, Malaysia. It is one of the newer Roman Catholic Churches in Malaysia and opened on Sept 29 th, 2010. It is host to about two thousand Catholics around the Bayan Lepas area in the south-west of Penang and has a diverse volunteer base serving many ministries as outlined below in Figure 4.

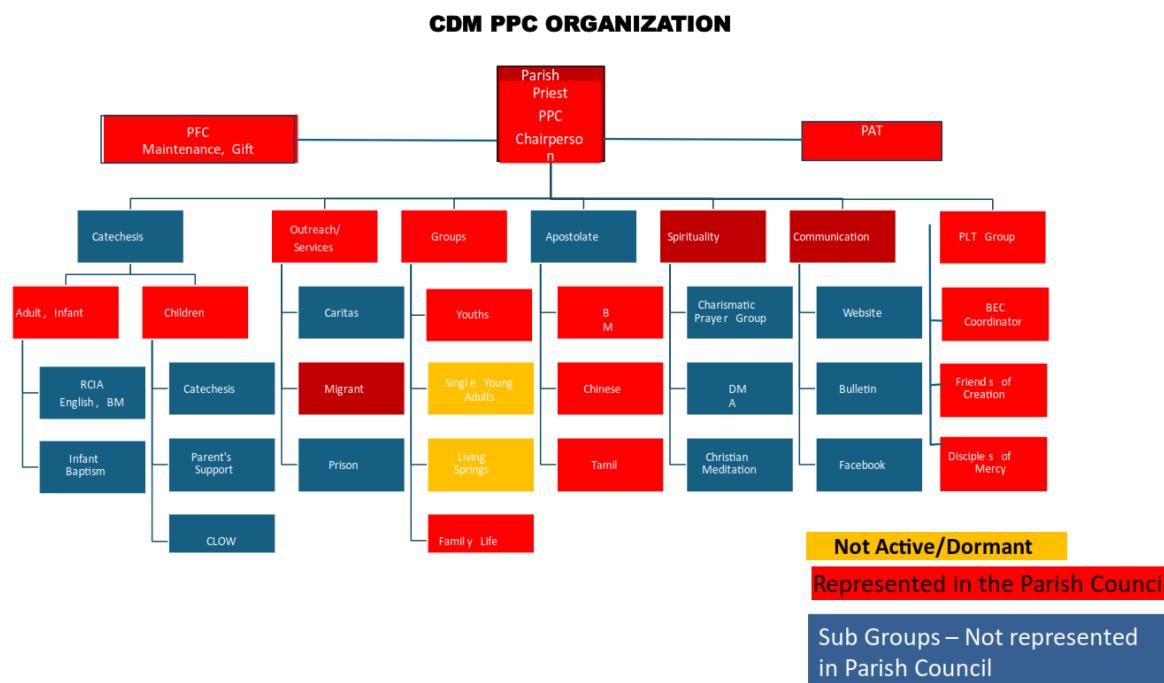


Figure 4: Case Study Organization Structure for Volunteer Groups.

Figure 4 outlines how the volunteers are organized by different ministries. Each ministry represents a unique function and comprises a group of volunteers who help to undertake work related to the charter of that ministry. The various nature of the ministries can be summarized as follows:

- I. Internal administration – these ministries such as Finance and the Pastoral council are responsible for managing payments, staff administration, calendar planning, banking and collections.
- II. Outreach – These ministries are external facing and help the poor, visiting prisoners in jail and helping migrants adjust to life in Malaysia/Penang state.
- III. Teaching/Catechists – Weekly classes to schoolchildren and young adults on better understanding the faith.
- IV. Apostolates - Members of the BM Apostolate consist of Sabahans and Sarawakians who have made Penang their home. They have either come here to study, work or start a family. Usually, their first language is their mother tongue, e.g. Bahasa Iban, Bidayuh, Kadazan, Dusun, etc. and their second language is Bahasa Malaysia. The group was formed to bring together people



with common background and experience, to share their faith with each other, in a language familiar to them. Other Apostolates would be Chinese or Tamil and these would be language specific to cater to the community.

- V. Groups – Young adults, retirees, families organizing activities to bring people closer together who have common interests.
- VI. Spirituality – Focus on building spirituality through activities such as prayer groups and meditation.
- VII. Communications - As time continue to change, effective online communicating is now a priority, in getting digital messages and information across, between the Parish and its community. This group also manages external sites such as the Facebook page and online streaming of weekend services. The Communications Ministry serve as a channel of communication for the Parish, Church Ministries and Groups in providing accurate and prompt information about the Catholic faith and Parish life through various communications platform.
- VIII. Liturgy – The liturgical team works cohesively under the leadership of the Parish Priest. The various teams in this ministry such as the choir, liturgical, servers and sacristans focus on ensuring that Masses, Feast Weeks and special celebrations go smoothly. The team leaders strive to work hand in hand to coordinate the role played by the volunteers who serve in the various ministries.

The total number of volunteers numbers is about two hundred, but many volunteers are represented across multiple roles. In discussions with the leadership team, it was confirmed that the volunteering statistics had dropped off since the pandemic and in the best case the volunteer participation rate was less than ten percent of total members.

The approach used in-depth interviews with 29 volunteers selected across various parish ministries that best reflected the demographics of the parish. The parish also has two paid full- time staff (handling administrative and maintenance duties) who were included as part of the interview participants as they were also volunteers in their own regard serving in ministries. This data describing the volunteer demographics are reflected in Table 1 below.



Table 1: Case Organization vs Individual Interview Demographics

	Organization	Interview Set
Gender		
Male	40%	35%
Female	60%	65%
Age Group		
21 - 30	15%	10%
30 - 50	45%	40%
50+	40%	50%
Ethnicity		
Chinese	40%	35%
Indian	30%	20%
Others	30%	45%

This selection process utilized non-probability sampling of the population as originally put forward by Creswell. (Bassous, 2015a). The researcher made best efforts to ensure that the selection of participants for the interviews closely mirrored the organization demographics. Triangulation was achieved via three separate focus groups. The focus groups were intact teams from different ministries with distinct responsibilities for finance, teaching children and performing rites of initiation for adults. Each interview took between 45 to 60 minutes and was conducted in a closed room setting face to face with the researcher. Six of the participants involved a husband-and-wife team and even though they served in different capacities, the researcher interviewed them together. Three of the participants were unable to attend in person and these interviews were done via Zoom. The interview questions were designed using Clary's Volunteer Functions Inventory (VFI) but modified to help answer the specific research questions. Clary's VFI framework has been extensively used for understanding the psychological drivers of volunteering behavior was developed in 1998 by Clary (Zhou & Kodama Muscente, 2022). It is a 30-item measure to gauge the degree to which volunteers meet personal commitments. These commitments were grouped into 6 categories or functional motivations (Clary et al., 1998).

There were a total of 14 interview questions, which included probing guides for the researcher, of which six focused on motivation, five for rewards, one for challenges and there were two supplementary questions for the leaders on their views and actions of what could help attract new volunteers and how best to retain and engage current volunteers. The three focus groups were conducted after the individual interviews and had a shorter set of eight questions designed to garner new inputs as well as validate some of the findings and themes from the individual interviews. The focus groups were all conducted in a round table setting involving between four and six participants from each unique group and took about an hour each. The next section will cover and discuss the findings of the interviews and focus groups and relate this back to past literature.



It was noted that there were some limitations to undertaking this qualitative case study. Primarily there is the researchers' own biases and risk of how data is interpreted. Then there was the issue of small sample sets and localized data. (Tavory, 2020). Deciphering themes can also be a complex task given the nature of the data is unstructured. For this approach, the researcher used thematic analysis using a six-step process of data familiarization, generating initial codes, searching for themes, reviewing themes, and mapping them against the interview questions, defining final themes and finally writing up the analysis and findings. To offset the limitations, the researcher ensured the interview transcripts were reviewed with the participants after the interview to ensure accuracy. Transcription was done using Transcribe software from a recording used for the interview, while coding used the NVivo Version 12 to assist in capturing themes and sub-themes.

3. Results and Discussion

The interview questions yielded seven main themes and thirty-two sub themes to support the research questions as outlined in Table 2 below. The sub-themes are organized by order of importance based on the number of responses from the participants.

Table 2: Themes from Individual Interviews by Research Questions

Research Question	Main Themes	Sub-Themes
What are the key factors that motivate parishioners to volunteer their time and services at the Church of Divine Mercy in Sg. Ara?	Choices and descriptions for volunteering Understanding what drew or inspired one to be a volunteer.	Inner satisfaction and fulfillment Use of unique talents and gifts Helping others Making things better Following your passions and serving God Being closer to community and inspired by fellow volunteers Growing one's faith Drawn by priest or family God and Saints
Supplementary Question for Leaders for Sustainability of future volunteers	Engagement of Volunteers Attracting new volunteers	Encouragement Fellowship Empathy Listening to current volunteers Emphasizing the privilege of serving Creating a sense of belonging Inviting others Planning more events and forums Role modelling and walking the talk Targeted communications and special skills Validate or invalidate
Maslow's hierarchy of needs		



What are the rewards these volunteers derive from their volunteerism?	Rewards and Recognition	Spiritual growth Making new friendships Recognition from leaders and fellow volunteers Recognized in the afterlife
Vroom's Expectancy Theory	Soft Skills	Hard Skills Managing and dealing with people Patience and humbleness Confidence and public speaking Critical thinking Intrinsic rewards
What are the challenges and barriers these volunteers face in their endeavours?		Lack of resources and people dropping out Expectations of self and others Criticisms Time, family, and work commitments Cultural barriers for non-Malaysians Acceptance of new ideas from new volunteers
	Barriers cited in focus groups	

The first research question focused on the motivations for volunteering and centred around motivations as well as what or who inspired the individual to sacrifice their time and effort to volunteer. These responses are organized by order of hierarchy based on number of responses.

The highest responses for motivations were a sense of satisfaction and fulfilment. The desire to volunteer was closely linked to an individual's passions and core values. The next set related to how individuals were able to use their own unique talents and gifts to serve in a particular volunteering capacity such as teaching language, music, maintenance and accounting expertise. After that the next set of respondents spoke of how their desired outcome was to help another person, a desire to make things better and a sense that by volunteering they were serving God. These findings link closely with the literature on one's own spiritual capital and their willingness to volunteer, as volunteering was seen as a way for an individual to act out their own faith as helping others was important for one's own altruistic goals and personal development, in addition the belief that they will have a better afterlife (Nistor, 2022). A desire to being closer to one's own community and friends as fellow volunteers was also cited. This links with the literature which outlined that volunteers typically would engage in activities that allow them to utilize their skills and talents which match what volunteering activities suit them best (van Ingen & Wilson, 2017).

Related to the theme of who or what inspired one to be a volunteer, the responses by order of hierarchy were a desire to be closer to the community and friends, growing one's faith and beliefs and getting encouragement from one's priest or family members. Comments in this category emphasized forging friendships within the volunteer circles, learning from being a volunteer, role modelling from one's family



members who were also dedicated volunteers and using past saints as a vision for doing good things. The concept of being inspired by fellow volunteers, underscores the value of using current volunteers to draw and reach out to new members.

As part of the interview process, leaders of ministries were also asked two additional questions around their strategies in attracting new volunteers and engaging their current teams. On engaging their current teams the leaders talked of providing more encouragement and affirmation when things were done well, organizing fellowships as an intact team, to create a sense of belonging, listening to the needs of the current members and addressing their challenges, showing empathy when individual team members were facing hardships and emphasizing the privileges and honour of being a volunteer and how the tasks being performed benefited others. On the secondary question of attracting new volunteers, the leaders talked about being on the lookout and approaching new members by making the tasks manageable for them, planning events and inviting the broader population, having specific targeted communications that addressed a need for specific skills and a time commitment. Here the leaders mentioned that often the call for new volunteers was too generic and did not provide sufficient details. Many of these inputs are deemed manageable in terms of implementation.

The subsequent section of the research focused on the rewards and benefits experienced because of volunteering. Here the volunteers talked about their growth in spirituality gained through volunteering, their growth in satisfaction and fulfilment which were also motivations, new friendships they had made, recognitions from leaders and other volunteers, and finally the prospect of being recognized in the afterlife. In addition, the volunteers mentioned many varied skills that they had acquired because of volunteering. These skills could be classified as hard or technical skills such as better computer use, technical knowledge, deepening music reading talents, creating video content, budgeting planning and organizing. There was also a secondary category of soft skills which the participants talked extensively about such as managing and dealing with people, growing their patience and humbleness, gaining confidence and improving their critical thinking. In many cases the participants specifically mentioned that they were not motivated by money, and they did not expect to learn these skills when they started and emphasized that having these skills earlier may have helped them with their career journeys before they became volunteers.

The final part of the research focused on understanding the barriers and challenges facing volunteers and these centred around a lack of resources and people dropping out after having been recruited, expectations of self and others, being criticized for work that was done and competing commitments from family, work and other areas that limited one's time. It was estimated that of the total population of members, only about seven percent gave their time. On the topic of expectations, it was noted that differing levels of engagement, different styles of working and having different idea of how best to achieve tasks were carried out. Interestingly in this section two additional challenges surfaced from the focus groups which were the challenges non-Malaysian volunteers faced with language and acceptance as well as new volunteers feeling their ideas were not easily accepted. The two paid staff of the parish who were also interview respondents spoke of the challenges in dealing with other



volunteers as many of them struggled to differentiate their roles as paid staff and volunteers. Lastly there was an effort on the part of the researcher to validate the two theories being investigated.

At a broad level though it was safe to assume that Maslow's Hierarchy of Needs as applied to volunteers was validated against the inputs of the respondents, in that they only saw themselves able to serve effectively after having fulfilled basic physiological needs. These conclusions were drawn based on the responses the researcher received from both the individual interviews and focus groups. According to Maslow, individuals with unsatisfied lower-level needs, physiological and safety needs, are unable to volunteer to satisfy higher level needs leading to self-actualization (Wood & Wood, 2021). Through the course of the interviews, it was also very apparent that many of the volunteers felt very proud of the work they were doing and the accomplishments they had achieved in their roles emphasizing the self-actualization they had received. Many of the participants were knowledgeable about Maslow's hierarchy and identified the different levels.

In looking at the different levels of Maslow's Hierarchy, the varied responses from the volunteers and their motivations and rewards could be linked to different levels. Maslow defined his third level as love and belonging equating to friendship, intimacy, family and a sense of connection. This level connects closely to the motivation sub-themes of a desire to be closer to the community and making new friendships. The fourth level which is esteem is explained as respect, self-esteem, status, recognition, strength and freedom could also be linked to the themes in this research such as being recognized by others, growing in self-confidence and experiencing inner satisfaction. The highest level of the pyramid which is self-actualization could be experienced by a feeling of growing spiritually and being closer to God. This illustrates that the levels of needs a volunteer experience could vary depending on the individual's needs.

Vroom's Expectancy Theory identifies sets of actions that result in sensible behaviors when provided alternatives. Basically, individuals are driven to perform better when they associate better rewards (Zboja et al., 2020). However, specifically for volunteers who do not receive monetary rewards, these rewards may come in other forms that motivate them in ways such as verbal rewards, self-satisfaction, internal growth and witnessing a personal impact in serving the community from their actions (Bassous, 2015).

Interestingly, through the conversations, several volunteers disclosed that they would prefer not to be recognized or called out, indicating a humbleness in serving without being accoladed in front of their peers. The largest number relating to this category called out their enrichment in personal and spiritual growth which ties closely to the discussion on spiritual capital in literature. After that there were benefits and rewards in self-satisfaction and personal fulfillment which again ties to how volunteers perceive their gains in spiritual capital. One candidate stressed that his rewards would come in the afterlife again signifying the link with spiritual capital. Making new friendships indicated the personal relationships which volunteers gained through their work and in one case a candidate said he had met his wife through his voluntary work. In terms of recognition, being recognized by one's peers and the leader stood out as the final category of recognition. These reasons all tie closely to the



notion of intrinsic motivations as pointed out in the literature review relating to rewards for volunteers.

The secondary question of skills learnt from volunteering exposed volunteers to both hard or technical skills such as computing, budgeting, and maintenance. In terms of soft skills, managing and dealing with people, patience, and humbleness, gaining confidence and critical thinking could also be considered as rewards gained through the act of volunteering. While the specific details of Vroom's theory were not explained to the participants, the researcher attempted to draw parallels of benefits and rewards the volunteers experienced intrinsically in their growth as a means of motivation.

The findings above are of particular importance for leaders of volunteers to have better ideas of how to engage new members while also keeping their current teams engaged, by understanding what motivates them in addition to considering their barriers and challenges. It is the intent of undertaking these actions that will help address a declining volunteer base. The unique challenges of the paid staff would also need to be addressed by having conversations with the people who interact regularly with them. Key points worth considering when dealing with volunteers are summarized as below:

- I. Their primary reasons for volunteering are the desire to fulfil their inner satisfactions, a desire to use one's personal gifts, help others in need, building friendships and making things better.
- II. It would thus be beneficial when recruiting new volunteers or considering current teams whether these needs are being fulfilled, and an individual's talents and gifts are being used to the fullest.
- III. When recruiting volunteers, it is important to be clear on a specific task or role as well as time commitment. It is also important to ensure that as volunteers are recruited in, the introduction of the new volunteers is done gradually so as not to overwhelm them.
- IV. Set reasonable expectations when recruiting new volunteers, understanding that different individuals will contribute differently and to the best of their abilities.
- V. Ensure teams are resourced sufficiently to prevent individuals getting overwhelmed.
- VI. Be clear about the role of paid staff and how they fit into the volunteer teams.
- VII. Be mindful about non-Malaysians and their personal challenges such as language and accent barriers, as well as new volunteers and being open to new ideas.

The recommendations above would be of value to each of the ministry leaders in the parish, particularly when dealing with their existing teams, taking note of the diversity of the group – particularly for non-Malaysians, recruiting new members and how best to deal with the paid staff daily. These recommendations are practical in nature, easy to observe and implement and could be used across all ministries. These recommendations could also be of value to other parishes, different religious organizations or even social enterprises that engage volunteers.



In the area of recruiting new volunteers and engaging current ones, leaders could undertake the following actions.

- I. Understand the skills sets within a ministry and think about what skills are needed or what areas the current team is lacking.
- II. When making announcements for new members, be specific on what skillsets are needed, what the time commitment is and whether the work can be done remotely, or the individual must come into the parish.
- III. When approaching new members, make entry into the work acceptable in small pieces of work and not be too intimidating from the perspective of joining a volunteer team. Bring the volunteers in on a gradual basis and make the task less intimidating so that the volunteers gradually can grow in their roles. Reduce the expectations at the start otherwise people will naturally tend to say no.
- IV. Be encouraging to the team members when they do acceptable work and not be overly critical of mistakes the volunteers make. In the parish being studied, the diversity of the volunteers was quite broad in terms of commitment and nationalities, and it is important to be aware that there will be differing levels of competency and commitment to the volunteering efforts. The comments on learning patience and humbleness bears testimony to the experiences these volunteers have experienced.
- V. Take the time to create a sense of belonging within the ministry that encourages the volunteers to stay longer and speak positively about their experiences and strengthens their motivation to stay and serve.

Take the time to organize small fellowships, appreciation lunches, recognize the teams for the good work done, show empathy when they have difficult moments in their lives and most importantly take the time to connect the dots of how the work that the volunteers do, connects to the bigger picture of how the parish functions and how the actions of these volunteers fit into the overall dynamics.

4. Conclusion

This paper has attempted to answer the research questions related to volunteer motivations, comprehending their rewards, and understanding their barriers and challenges. Volunteer motivations, while experienced worldwide in times of crisis and natural disasters, opens up unique perspectives in a faith-based organization. In the realm of the rich cultural-specifics of Nusantara communities and volunteerism in faith-based organizations, this paper adds to the varied sources of rich collective knowledge and wisdom on the Nusantara region community service and engagement. Especially important, is the context of understanding sources of motivation in civic engagement within Nusantara community's religious context. In addition, there are valuable insights gained into understanding leaders points of views on strategies for attracting new volunteers as well as ensuring current volunteers are retained. These insights include items such as better understanding the roles of paid staff and their interactions and expectations with other volunteers, the unique challenges such as language and culture faced by non-nationals and coping with vastly differing levels of commitment.



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The Influence of Tafsir al-Azhar Hamka in Re-Understanding the Quran and Sunnah in the Archipelago

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Submitted: 17/11/2024 | Revision Accepted: 07/12/2024 | Online: 08/08/2025

Abstract:

Purpose: Hamka's tafsir al-Azhar is one of the monumental tafsir works that has made a great contribution to the understanding of the Qur'an in Indonesia and the archipelago in general. This work not only contains an interpretation of the verses of the Qur'an, but also reflects an integrative approach that connects aspects of traditional Islamic scholarship with modern thought. This study aims to explore the influence of Tafsir al-Azhar in shaping the understanding of Muslims in the archipelago towards returning to the Qur'an and Sunnah. This study also examines how this tafsir succeeded in bridging the classical Islamic scientific tradition with the social and intellectual needs of contemporary society, making Tafsir al-Azhar the main reference in the study of tafsir in the archipelago.

Methods: With a qualitative approach, this study analyzes how this interpretation is accepted and applied in the lives of Muslim communities in Indonesia, as well as its impact on a more inclusive, rational, and moderate understanding of religion.

Results: The results of this study are expected to provide insight into the relevance of Hamka's tafsir in strengthening the re-understanding of the Qur'an and Sunnah in the midst of modern challenges.

Keywords:

Tafsir al-Azhar, Hamka, Understanding the Qur'an, Sunnah, Nusantara, moderate Islam, Tafsir studies



Let's Wake Them Up! Embedding Nusantara Cultural Values into Accounting Education

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Submitted: 05/12/2024 | Revision Accepted: 18/12/2024 | Online: 08/08/2025

Abstract:

Purpose: This paper dives in the possibility of embedding cultural values into accounting education through novels. Two dimensions were explored. First, a textual dimension was viewed by noting how Nusantara values are presented in three novels written by an accounting lecturer: Konspir(akuntan)si 1, Konspir(akuntan)si 2, and Konspir(akuntan)si 3.

Methods: Through discussions during the launching of the novels, retrospectively, comments by experts in accounting, literature and culture were collected specifically on the possibility of the use of accounting novels to awaken consciousness about Nusantara values in accounting education.

Results: It is found that such literary art may have much contribution to awakening Nusantara beings in the future Nusantara accountants, since the messages are conveyed subtly through story-telling.

Keywords:

Nusantara Values, Accounting Novel, Accounting Education



Multidimensional Analysis of Community Resilience: Social Dynamics in Post-Disaster Palu, Indonesia

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Submitted: 06/12/2024 | Revision Accepted: 12/12/2024 | Online: 08/08/2025

Abstract:

Purpose: The 2018 earthquake and tsunami in Palu, Indonesia, caused significant social disruption, challenging community resilience and adaptive capacities. Purpose: This study aims to analyze the multidimensional aspects of community resilience and social dynamics in post-disaster Palu.

Methods: A qualitative approach was employed, utilizing in-depth interviews, focus group discussions, and participant observation to gather rich, contextual data.

Results: Findings reveal complex social dynamics, including shifts in social structures, emergence of new support networks, and adaptive strategies employed by the community.

Conclusions: The study highlights the multifaceted nature of community resilience, emphasizing the importance of social capital and adaptive governance in post-disaster recovery.

Keywords:

Community Resilience, Social Dynamics, Post-Disaster Recovery, Adaptive Capacity, Palu Earthquake and Tsunami



Menelusuri Wawasan Nusantara melalui Arca Joko Dolog: Jejak Sejarah dan Pemaknaan

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Submitted: 10/12/2024 | Revision Accepted: 12/12/2024 | Online: 08/08/2025

Abstract:

Purpose: Penelitian ini bertujuan untuk mengungkap jejak wawasan Nusantara yang terkandung dalam seni dan sejarah Arca Joko Dolog, sebuah peninggalan budaya era Kerajaan Singasari, yang diyakini sebagai perwujudan Raja Kertanegara (1268-1292 M), penguasa terakhir Kerajaan Singasari. Penelitian ini menyoroti inskripsi pada lapis (alas) arca yang dikenal sebagai Prasasti Wurare.

Methods: Metode penelitian melibatkan analisis aksara pada Prasasti Wurare, studi literatur sejarah terkait Kerajaan Singasari, serta dokumentasi visual Arca Joko Dolog dan Prasasti Wurare.

Results: Hasil penelitian menunjukkan bahwa Arca Joko Dolog dan Prasasti Wurare bukan hanya merupakan karya seni bernilai tinggi, tetapi juga mengandung pesan persatuan tanah dan air sebagai cikal bakal wawasan Nusantara. Inskripsi pada Prasasti Wurare menyinggung pemisahan tanah Jawa menjadi dua wilayah, yaitu Kerajaan Panjalu dan Kerajaan Jenggala, yang dilakukan oleh Raja Airlangga pada abad ke-11 sebagai upaya mencegah perebutan kekuasaan. Kondisi ini menginspirasi Raja Kertanegara untuk memulai penyatuan kembali Jawa serta pulau-pulau di luar Jawa melalui gagasan politik Cakrawala Mandala Dwipāntara. Gagasan tersebut kemudian dilanjutkan pada era Kerajaan Majapahit di bawah kepemimpinan Raja Tribhuwanattunggadewi Jayawishnuwardhana (1328-1350 M) dan Mahapatih Gajah Mada.

Conclusions: Temuan ini menegaskan bahwa Arca Joko Dolog merupakan representasi wawasan Nusantara yang berakar pada semangat persatuan dan kebhinekaan.

Keywords:

Wawasan Nusantara, Arca Joko Dolog, Kerajaan Singosari, Penyatuan Wilayah



Development of Sustainable Human Development Model in Rural Areas: Case Study of Soberejo Village, Temanggung Regency, Central Java, Indonesia

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Submitted: 22/12/2024 | Revision Accepted: 30/12/2024 | Online: 08/08/2025

Abstract:

Purpose: Development based on freedom and democracy will produce social welfare, so that mass poverty can be avoided or at least can be recovered in a faster time, which will ultimately lead to social change. Sustainable human development is one of the important goals in improving the quality of life of the community, especially in rural areas. Soberejo Village, Temanggung, Central Java, is one example of a rural area that has the potential to be developed as a model of sustainable human development. This area faces various challenges such as poverty, limited access to education and health, and environmental damage. This study aims to identify factors that influence sustainable human development in Soberejo Village, Temanggung, Central Java and develop a development model that is in accordance with local needs and potential. This study also aims to analyze the impact of the development model on the quality of life of the community.

Methods: The research method uses a qualitative approach with data collection techniques through interviews, surveys and document analysis.

Results: The results of the study show that economic, social, environmental and political factors have a significant impact on the quality of life of the community. The sustainable human development model developed includes increasing access to education and training for the development of micro, small and medium enterprises, environmental management and increasing community participation.

Conclusions: This model can improve the quality of life of rural communities and contribute to sustainable development. This study provides recommendations for governments and development practitioners to develop effective sustainable human development strategies.

Keywords:

Sustainable Human Development, Rural Area, Soberejo Village Development Model



Modern Slavery in Indonesia's Supply Chain: A Historical and Cultural Perspective

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Submitted: 02/01/2025 | Revision Accepted: 10/01/2025 | Online: 08/08/2025

Abstract:

Purpose: Indonesia has one of the highest rates of modern slavery among all countries in the world. The export of Indonesian goods, such as wood, coffee, cocoa, rubber, and palm oil, has been affected due to the country's practice of modern slavery. Understanding the underlying causes of Indonesia's modern slavery is crucial to finding a solution.

Methods: This study adopts a qualitative approach, using literature review to explore the history of slavery in Indonesia and the culture that impact the practice of modern slavery. Secondary data is used in this research from previous academic research, historical publications, and reports by international organizations such as the International Labour Organization (ILO) and Walk Free Foundation.

Results: The findings reveal that the tradition of slavery in Indonesia started from the ancient kingdoms and colonial times. The Dutch colonial administration practiced slavery in Indonesia, using enslaved people for economic purposes. The practice of slavery continually occurs because of the existence of cultural norms, such as hierarchical systems and obligations like *utang piutang* (debt bondage), which have roots in traditional Indonesian society and persist in modern forms. Modern forms of slavery in Indonesia are in the forms of forced labor, debt bondage, and trafficking in industries like fishing, palm oil, and domestic work.

Conclusions: To combat modern slavery while respecting Indonesia's cultural heritage, this study emphasizes the importance of strengthening laws, increasing awareness, and reinterpreting cultural norms to align with modern human rights standards. By addressing the root causes of modern slavery, Indonesia can develop sustainable supply chains and maintain its culture without violating worker rights.

Keywords:

Modern Slavery, Culture, History



Ethics and Artificial Intelligence in Marketing

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Submitted: 19/01/2025 | Revision Accepted: 31/01/2025 | Online: 08/08/2025

Abstract:

Purpose: This study investigates the ethical implications of Artificial Intelligence (AI) in marketing through a comprehensive bibliometric analysis and literature review. As reliance on AI technologies for data-driven marketing strategies increases, understanding the associated ethical concerns becomes essential for researchers and practitioners alike (Kumar et al., 2024). The primary objectives of this exploration are to identify key themes and trends in the existing literature, assess the evolution of scholarly discussions on AI ethics in marketing, and provide recommendations for future research.

Methods: To achieve these objectives, the study employs a systematic bibliometric analysis of publications sourced from prominent academic databases, including Scopus, Web of Science, and Google Scholar, focusing on articles published over the last decade (Marzi et al., 2024). The analysis encompasses tracking publication trends to visualize growth within the field, alongside conducting citation analyses to evaluate the impact of individual studies by measuring total citations and average citations per year (Demir et al., 2024). An authorship analysis was performed to identify collaboration patterns among leading contributors and researchers, revealing co-authorship networks that reflect interdisciplinary efforts (Maghsoudi et al., 2023). Additionally, a keyword analysis was conducted to ascertain major themes, utilizing both keyword frequency and co-occurrence measures to explore relationships among identified topics. The geographical distribution of research contributions was also mapped, highlighting significant activity in North America and Europe, with an emerging interest from Asian countries. The use of bibliometric software tools facilitated the visualization of data through graphs and charts, providing a clear representation of publication trends, citation networks, and collaboration dynamics. Collectively, these methods offer a nuanced overview of the ethical discourse surrounding AI in marketing and outline future research directions.

Results: The findings indicate a substantial increase in research activity focused on the ethical boundaries of AI in marketing, reflecting heightened awareness in both academia and industry. Key themes identified in the literature include algorithmic bias, data privacy, transparency, and accountability. These themes underscore the complex interplay between technological advancement and ethical considerations in marketing practices. AI marketing strategies that rely heavily on data-driven approaches may overlook these cultural nuances, leading to practices that are perceived as intrusive or disrespectful, especially when it comes to handling consumer privacy and data. The possibility of algorithmic bias further complicates the situation, as AI systems may inadvertently perpetuate stereotypes or misrepresent certain communities, undermining the values of fairness and inclusivity that are central to Nusantara culture. Transparency is another critical theme highlighted by the exploration. As consumers become increasingly aware of AI's role in marketing, there is a growing demand for transparency regarding how their data is collected, utilized, and shared. The literature suggests that clear communication about AI processes is vital for building consumer trust and fostering responsible



marketing practices. This study advocates for organizations to adopt transparent practices that educate consumers about the implications of AI technologies. Accountability in AI-driven marketing is also examined. The literature underscores the necessity for well-defined guidelines that clarify responsibility for marketing decisions influenced by AI. Establishing accountability frameworks is crucial to address potential legal and reputational risks associated with unethical AI practices. The study concludes that marketers must be held accountable for the ethical implications of their AI strategies, promoting a cultural shift towards responsible AI operation within organizations. The geographical analysis of research contributions reveals a concentration in North America and Europe, with increasing interest from Asian countries. The analysis identifies leading institutions and collaborative efforts that reflect the interdisciplinary nature of research in this area. The study encourages ongoing collaboration among scholars, practitioners, and policymakers to develop comprehensive ethical guidelines for AI in marketing. Future research directions suggested in this study include exploring emerging AI technologies and their ethical implications, as well as integrating ethical considerations into marketing education. The potential for AI to enhance consumer engagement while maintaining ethical standards presents additional avenues for investigation.

Conclusions: This bibliometric analysis and literature review contribute significantly to the discourse on ethics and AI in marketing by providing a structured overview of current research, highlighting crucial ethical themes, and identifying areas for future inquiry. The study advocates for the responsible integration of AI technologies in marketing to enhance consumer trust and uphold ethical standards that benefit both businesses and society. By addressing the ethical challenges posed by AI, stakeholders can foster a more equitable and transparent marketing landscape.

Keywords:

Marketing, Artificial Intelligence, Ethics, Literature Review



The Effect of Competence and the Application of Standard Operating Procedures (SOP) on the Performance of Vehicle Testers at the Tangerang Regency Transportation Office

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Submitted: 31/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This study aims to determine the influence of competence and the application of Standard Operating Procedures (SOP) on the performance of vehicle testers at the Tangerang Regency Transportation Office.

Methods: The study uses a quantitative approach with an associative descriptive method, involving the entire population of vehicle testing employees through the census sampling method. Data were collected using questionnaires and observations, then analyzed by validity, reliability, normality, multicollinearity, heteroscedasticism, multiple linear regression, t-test, f-test, and coefficient of determination (Adjusted R Square).

Results: The results of the study showed that competence had a positive and significant effect on employee performance with a calculated t value of $6.524 > t$ table 2.045, while the implementation of SOP also had a positive and significant influence with a calculated t value of $5.743 > t$ table 2.045. Simultaneously, these two variables have a significant effect on employee performance, which is shown by the calculated f value of $32.456 > f$ table 3.12. The Adjusted R Square showed that competence and SOP implementation together were able to explain 57.8% of the variation in employee performance, while the remaining 42.2% was influenced by other factors that were not studied.

Conclusions: This study recommends increasing training to strengthen employee competence and stricter supervision of the implementation of SOPs to improve the performance of vehicle testers optimally.

Keywords:

Competence, Standard Operating Procedures (SOP), Employee Performance



The Influence of Communication Skills and Work Motivation on Employee Performance at PT. Parison Asia Pasifik

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Submitted: 31/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This study aims to analyze the effect of communication skills and work motivation on employee performance at PT. Parison Asia Pasifik.

Methods: The study uses a quantitative approach with an associative descriptive method. The sampling technique uses a saturated sample method (census sampling), involving all employees as respondents. Data were collected through questionnaires and observations, then analyzed using validity tests, reliability, classical assumptions (normality, multicollinearity, heteroscedasticity), multiple linear regression, t-test, F-test, and coefficient of determination (Adjusted R Square).

Results: The results showed that communication skills have a positive and significant effect on employee performance with a calculated t value of $6.214 > t$ table 2.045 . Work motivation also has a positive and significant effect with a calculated t value of $5.876 > t$ table 2.045 . Simultaneously, these two variables have a significant effect on employee performance, as evidenced by the calculated F value of $30.124 > F$ table 3.12 . The coefficient of determination (Adjusted R Square) shows that communication skills and work motivation together explain 63.2% of the variation in employee performance, while the remaining 36.8% is influenced by other factors not examined in this study.

Conclusions: This study recommends that companies improve communication training and work motivation programs, as well as improve the monitoring system to increase overall employee productivity.

Keywords:

Communication Skills, Work Motivation, Employee Performance



The Influence of Training and Career Development on Employee Performance at PT. Bintang Ekatama Visindo: The Influence of Training and Career Development on Employee Performance

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Submitted: 31/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: The purpose of this study is to determine the simultaneous effect of training and career development on employee performance at PT. Bintang Ekatama Visindo.

Methods: This research employs a quantitative associative-causal approach. The study utilizes a path analysis model known as Structural Equation Modeling (SEM).

Results: The results of this study indicate that training has a significant positive effect on employee performance, thus H1 is accepted. Furthermore, the findings show that career development has a significant positive effect on employee performance, leading to the acceptance of H2. This research demonstrates that structured training and sustainable career development programs can enhance employee competencies and motivate employees to achieve organizational goals.

Conclusions: The policy implications derived from this study highlight the importance for companies to provide guidance for practitioners in designing programs that not only improve individual performance but also contribute to the overall success of the organization. This study has limitations, indicating that the company needs to establish an effective monitoring and evaluation system to measure the impact of training and career development on employee performance. It also encourages a culture of continuous learning within the company, such as conducting seminars, workshops, or regular discussions that promote employees to keep learning and sharing knowledge.

Keywords:

Employee Performance, Training, Career Development



The Influence of Democratic Leadership Style and Position Promotion on Employee Performance of PT Supermal Karawaci at U – Residence 2

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Submitted: 31/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This study aims to determine the influence of Democratic Leadership Style and Position Promotion on Employee Performance at PT Supermal Karawaci at U – Residence 2.

Methods: This study uses a quantitative approach with a descriptive type of research. The population in this study is 53 people. The research sample was 53 people using the saturated sample technique, which is a sampling technique when all members of the population are used as samples. Data collection techniques and tools are questionnaires. The analysis method uses Structural Equation Modeling (SEM) through the Partial Least Square (PLS) approach assisted by Smartpls 4.0 software.

Results: The results of the study show that democratic leadership style has a positive and significant effect on employee performance, and job promotion has a positive and significant effect on employee performance. The influence of democratic leadership style and job promotion on employee performance has an R-Square Adjusted of 0.557 so that the contribution of this study is 55.7% while the remaining 44.3% is influenced by other variables that are not included in this research model.

Conclusions: The results of this research can be used as a consideration for PT Supermal Karawaci at U - Residence in making policies to improve employee performance.

Keywords:

Democratic Leadership Style, Position Promotion, Employee Performance



The Influence of Work-Life Balance and Flexible Working Arrangement on Employee Performance and Job Satisfaction of Female Employee at PT. KMK Global Sports

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Submitted: 31/01/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This study aims to analyze the effect of Work-Life Balance and Flexible Working Arrangement on Employee Performance and Job Satisfaction of female employees at PT KMK Global Sports.

Methods: This study uses a quantitative method with the Partial Least Square - Structural Equation Modeling (PLS-SEM) analysis technique. Data were collected through questionnaires from 50 respondents who were employees of PT KMK Global Sports.

Results: The results of the analysis show that Work-Life Balance has a significant effect on Employee Performance with a T-Calculation value of 2.261 and a P-Value of 0.024, as well as on Job Satisfaction with a T-Calculation value of 2.599 and a P-Value of 0.009. Flexible Working Arrangement also has a significant effect on Employee Performance with a T-Calculation value of 2.912 and P-Value of 0.004, as well as on Job Satisfaction with a T-Calculation value of 3.978 and P-Value of 0.000. However, Job Satisfaction does not have a significant effect on Employee Performance with a T-Calculation value of 1.904 and P-Value of 0.057. In addition, Job Satisfaction also does not mediate the relationship between Work-Life Balance and Employee Performance (T-Calculation 1.327 and P-Value 0.184), or between Flexible Working Arrangement and Employee Performance (T-Calculation 1.816 and P-Value 0.069).

Conclusions: The results of this study indicate that Work-Life Balance and Flexible Working Arrangement policies can directly improve performance without having to go through increasing job satisfaction. Therefore, companies are advised to strengthen work-life balance and work flexibility policies in order to directly improve employee productivity and welfare.

Keywords:

Work-Life Balance, Flexible Working Arrangement, Employee Performance, Job Satisfaction



Constructing Applied Accounting Research Based on The Nusantara Paradigm

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Submitted: 01/02/2025 | Revision Accepted: 04/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This article aims to construct applied accounting research using the Nusantara Paradigm. Applied accounting research involves the practical application of accounting theories and methodologies to solve real-world problems. However, in reality, applied accounting is often referred to as accounting that only aims to meet the needs of industry and has no impact on the world of social, cultural, and religiosity because it only uses positivistic methods (Richardson, 2004). This thinking error then makes AAR stagnant, fails to trigger sustainable change, and fails to explore new ideas (Verstegen, 2004).

Methods: Within the framework of the archipelago paradigm, applied research has the potential to disrupt and construct not only industry but also social and cultural constructions and religiosity (Mulawarman, 2021). This article shows that it can be within the archipelago paradigm. The distinctiveness of AAR-Nusantara based that connects technology and solution is able to present not only middle range theory but also has implications for the development of accounting technology that has the spirit of the archipelago.

Results: This article proves that wrong thinking using modern accounting theories leads to academic and practical chaos. When looking at practical problems, applied research always uses the lens of materialism, for example, agency theory, so that the problems that arise are only related to agent-principal conflicts that are opportunistic towards company assets. Organizational problems do not only lie in material elements; until now, corrupt and criminal practices still often take place in organizations (Lehman and Okcabol, 2005; Lehman and Thorne, 2015). This proves the failure of the practical contribution of AAR and the failure of modern accounting theories as a foothold. Because of this, there should be an exploration of new ideas and multidisciplinary approaches in the field of AAR (Verstegen, 2004). Accounting practices in the past, present values where solutions to accounting problems do not have to be present from a material perspective but from social, spiritual, and cultural. Practices in the Mataram kingdom present religiosity as a guardian of order (Lutfillah, 2014) as well as the Majapahit Kingdom (Lutfillah, 2021). In the 2nd century BC, the Dead Sea Scrolls prove the Essene community also based religiosity on accounting practices (Herda et al., 2013). This is what cannot be revealed in practical accounting, namely value. To see this value, of course, what must be done is to shift the paradigm. Although accounting research is social and cultural from various social theory perspectives (Harvey et al., 2020; Nguyen, 2019; Spence, 2009; Tinker, 2001; Wickramasinghe and Alawattage, 2018), it still fails to see religion as a value in accounting research and accounting practice problems (Mulawarman and Kamayanti, 2018). In contrast, the value of the archipelago can be a solution to the issues of accounting practices and the construction of civilization by using the archipelago paradigm rules.

Conclusions: The novelty of this research is that it uses a multidisciplinary approach, especially the Nusantara Paradigm, in building an applied accounting research approach. This research has



practical and academic contributions. The useful contribution, of course, is to solve and see problems in the glasses of the archipelago's identity and produce applied technology of archipelago accounting. In contrast, the theoretical contribution is a frame of reference in building middle-range theory.

Keywords:

Applied Accounting Research, Research Paradigm, Nusantara Paradigm



The Indonesia-Malaysia Confrontation 1963-1966: Kinship Diplomacy Efforts in Resolution

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Submitted: 15/01/2025 | Revision Accepted: 17/01/2025 | Online: 08/08/2025

Abstract:

Purpose: The Indonesia-Malaysia Confrontation of 1963–1966 was one of the most significant regional conflicts in Southeast Asian history. The conflict was triggered by the formation of the Federation of Malaysia, which Indonesia perceived as a threat of neo-imperialism and a new form of colonialism. This paper aims to analyze the diplomatic approaches employed by both parties to resolve the conflict, focusing on the role of third-party states, changes in political leadership in Indonesia, and formal negotiations such as the Jakarta Agreement of 1966. It examines the success factors of kinship diplomacy in easing tensions and its long-term implications for regional relations.

Methods: Using a qualitative approach based on primary sources such as official documents, diplomatic reports, and historical interviews, the paper finds that patience, compromise, and the role of regional facilitators were crucial elements in achieving conflict resolution.

Results: Ultimately, this paper provides valuable insights into conflict resolution approaches that can be applied to managing regional tensions in the future, particularly involving these two neighboring countries.

Conclusions: The resolution of the Indonesia–Malaysia Confrontation (1963–1966) underscores the efficacy of kinship diplomacy in navigating one of Southeast Asia’s most volatile inter-state crises. This study demonstrates that shared cultural ties, regional proximity, and mutual historical linkages between Indonesia and Malaysia provided a unique foundation for diplomatic reconciliation. Future research should further investigate how such kinship-based frameworks can inform regional peacebuilding and be integrated into diplomatic studies curricula, particularly within the context of intra-ASEAN relations.

Keywords:

Confrontation, Indonesia, Malaysia, Diplomacy, Kinship



Improvement Cell Viability of *Lactobacillus Paracasei* Cultivation as A Potential Probiotic Starter Culture Through Optimization Growth Condition by Response Surface Methodology

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Submitted: 14/01/2025 | Revision Accepted: 22/01/2025 | Online: 08/08/2025

Abstract:

Purpose: The study investigates the suitability of *Lactobacillus paracasei* as a functional starter culture for probiotic drinks. The growing interest in foods containing beneficial bacteria, there is a corresponding increase in the demand for lactic acid bacteria as starter cultures, especially in fermented dairy products. This research aimed to enhance the production of *L. paracasei* by optimizing growth conditions using response surface methodology (RSM). The study assessed the physicochemical properties of *L. paracasei*, the effects of bioreactor cultivation, and its antimicrobial properties.

Methods: Central Composite Design (CCD) was employed to optimize fermentation parameters (temperature, initial pH, and inoculum size) to maximize cell viability.

Results: Results indicated that cell viability in low-fat milk (LFM), skim milk (SM), and full cream milk (FCM) were $8.53 \log_{10}$ CFU/mL, $8.90 \log_{10}$ CFU/mL, and $8.70 \log_{10}$ CFU/mL, respectively, with LFM being selected for further studies. Optimal conditions derived from the RSM study were 30.2°C , initial pH of 6.18, and an inoculum size of 2%, achieving a cell viability of $9.21 \log_{10}$ CFU/mL. Comparing optimized and unoptimized conditions, a 7.97% increase in cell viability was observed. Further, cultivation in a bioreactor using the optimal conditions improved the specific growth rate from $0.297 \pm 0.0744 \text{ h}^{-1}$ in shake flasks to $0.38 \pm 0.432 \text{ h}^{-1}$ in the bioreactor, resulting in a 27.94% increase in yield. Antimicrobial activity was evaluated using the agar well diffusion method, showed that *L. paracasei* inhibited *E. coli* ($10.5 \pm 0.707 \text{ mm}$) and *P. aeruginosa* ($11.5 \pm 0.085 \text{ mm}$). The findings suggest that *L. paracasei* cultivation can be significantly enhanced using low-fat milk medium, and the bacterium shows potential for producing secondary metabolites like bacteriocins, which can be used to combat foodborne pathogens.

Conclusion: In conclusion, *L. paracasei* is a viable candidate for use in probiotic drinks, with optimized cultivation conditions leading to increased production efficiency and potential applications in food safety and preservation.

Keywords:

Lactobacillus Paracasei, Optimization, Response Surface Methodology, Cell Viability, Secondary Metabolites



Increasing Farmer Knowledge in Cultivating Refugia Plants as Pest Control and Educational Tourism

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Submitted: 27/01/2025 | Revision Accepted: 01/02/2025 | Online: 08/08/2025

Abstract:

Purpose: This study aims to improve farmers' knowledge and skills in cultivating refugia plants, thereby supporting integrated pest management (IPM) and attracting educational tourism.

Methods: The methods used include: training programs, demonstration plots, extension services, and educational materials.

Results: Refugia refers to areas or habitats that provide shelter for beneficial organisms, especially natural enemies of pests from the predator, parasitoid, and pollinator types such as *Lycosa pseudoannulata*, *Oxyopes javanus*, *Tetragnatha* spp, *Microvelia daulasi atrolineata*, *Cyrtorhinus lividipennis*, *Paederus fuscipes*, *Ophionea nigrofasciata*, *Agriocnemis* spp, *Conocephalus longipennis*, *Harmonia octomaculata*. Refugia plants provide shelter, food, and breeding sites for these beneficial organisms, allowing them to thrive and contribute to natural pest control. Natural enemies such as Refugia plant cultivation have significant potential to improve sustainable agricultural practices by promoting natural pest control and offering opportunities for educational tourism.

Conclusions: The results of this activity show that farmers are aware of the benefits of refugia plants, the types of plants that can be used as refugia plants, refugia cultivation techniques, as well as refugia planting and maintenance and refugia seed production.

Keywords:

Biological Insecticides, Education, Sustainable Agriculture



Quality Characterization of Arabica Coffee Soaked at Different Fruit Maturity Levels

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Submitted: 28/01/2025 | Revision Accepted: 01/02/2025 | Online: 08/08/2025

Abstract:

Purpose: Coffee is one of the world's primary agricultural commodities, with its economic value depending on agronomic and post-harvest quality. In racutan/lelesan harvesting, green cherries are still collected if less than 10% of the fruit remains on the tree. However, data on optimal fruit selection for producing high-quality coffee remains limited. This study aims to determine the quality and flavor of Arabica coffee after soaking at various fruit maturity levels.

Methods: The research method used was a Two-Way ANOVA 2 x 3 design, with two factors: two types of soaking containers (A1 = plastic basin, A2 = stainless steel container) and three fruit maturity levels (B1 = Red, B2 = Half-ripe, B3 = Green), with a control treatment using hot water. The observed parameters included physical tests, acidity tests, and cup tests.

Results: The results showed that soaked coffee had good physical quality, with normal color and aroma, free of foreign objects and insects. Most beans passed through a <7 mm sieve, with the highest quality found in sample A1B3 (defect number 9.6, grade 1) at the green maturity level. Acidity tests showed no significant effect based on the container or fruit maturity level. Organoleptically, the fragrance was dominated by caramel and sugarcane aromas.

Conclusions: The selection of green coffee cherries can produce the best physical quality with the appropriate soaking method. Further studies are needed on other coffee varieties and additional quality parameters.

Keywords:

Arabica Coffee, Racutan, Lelesan, Agriculture



Melacak Sistem Irigasi untuk Sektor Pertanian Era Majapahit: Solusi untuk Nusantara Masa Kini

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Submitted: 31/01/2025 | Revision Accepted: 02/02/2025 | Online: 08/08/2025

Abstrak:

Purpose: Kemakmuran sektor pertanian salah satunya terletak pada keberhasilan penerapan sistem irigasi yang efektif. Permasalahan sistem irigasi saat ini menjadi tantangan besar dalam sektor pertanian modern, terutama di tengah perubahan iklim, degradasi lingkungan, dan sistem distribusi air yang tidak efisien. Kekurangan pasokan air pada musim kemarau mengancam produktivitas pertanian.

Methods: Studi ini menggunakan metode studi pustaka untuk mengeksplorasi solusi yang dapat diterapkan dengan mengacu pada sistem irigasi era Majapahit berdasarkan data artefaktual.

Results: Majapahit mampu menjadi salah satu pengekspor beras hingga mampu terlibat dalam koneksi perdagangan regional dan juga global. Perdagangan ini menjadi sumber pendapatan yang besar bagi Kerajaan Majapahit. Keberhasilan era Majapahit pada sektor pertanian yang disebabkan oleh kebijakan pemerintahnya yang mendukung, dapat dilihat dari sistem irigasinya yang maju dan kompleks. Prasasti Jiwu (1486 M) dan Prasasti Trailokyapuri (1486 M) menjelaskan terkait efektifnya pengelolaan sumber daya manusia untuk mengatur sistem irigasi yang ada. Selain bukti prasasti, juga ditemui peninggalan artefak atau peninggalan arkeologis yang berada di Trowulan Mojokerto, yang pertama yaitu waduk tua. Trowulan yang menjadi pusat pemerintahan era Majapahit memiliki waduk-waduk yang dibangun untuk menunjang sistem irigasi yang dapat dimanfaatkan untuk memenuhi kebutuhan masyarakatnya pada sektor pertanian. Terdapat banyak sekali waduk yang dibangun pada era Majapahit, namun hingga saat ini hanya tersisa enam waduk yang masih dapat diketahui keberadaannya dan di antaranya sudah dialihfungsikan, baik menjadi lahan pertanian, rawa, dan kebun. Waduk yang masih dapat diketahui keberadaannya tersebut yaitu Waduk Baureno, Waduk Kumitir, Waduk Keraton, Waduk Temon, Waduk Domas, dan Waduk Kedung Wulan. Temuan yang kedua pada era Majapahit yaitu jaringan kanal yang mengadopsi sistem irigasi bawah tanah yang terstruktur dari intake sampai dengan penyaluran ke lahan pertanian. Sistem irigasi bawah tanah juga lebih tepat guna jika diterapkan di wilayah yang relatif kering seperti di Jawa Timur. Penerapan teknologi irigasi bawah tanah merupakan langkah strategis dalam mendukung pertanian presisi dan berkelanjutan di Indonesia. Dampak positif dapat dirasakan dari pembangunan sistem irigasi bawah tanah ini, di antaranya yaitu meningkatnya produktivitas tanam. Sistem irigasi bawah tanah memiliki efektivitas yang lebih tinggi jika dibandingkan dengan irigasi permukaan karena mampu mereduksi tingkat kehilangan air akibat evaporasi dan limpasan, sehingga meningkatkan efisiensi penggunaan air hingga kurang lebih 90%. Penerapan irigasi bawah tanah di Indonesia masih dalam tahap pengembangan dan belum diadopsi secara luas.

Conclusions: Pengembangan irigasi bawah tanah ini merupakan solusi alternatif yang dapat diaplikasikan pada berbagai macam kondisi lahan, mulai dari lahan yang kering hingga lahan yang sudah menjadi perkotaan, yang mana kondisi ini sangat cocok jika diterapkan di Indonesia pada



masa kini. Studi ini merekomendasikan pengembangan system irigasi modern berbasis kearifan lokal guna mendukung ketahanan pangan dan pengelolaan sumber daya air yang lebih berkelanjutan untuk nusantara masa kini.

Keywords:

Irigasi, Pertanian, Majapahit, Sumber Daya Air, Nusantara