AI-Based Training Strategy to Improve Employee Green Literacy

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Abstract

Amid growing global and local environmental challenges, organizations are increasingly required to strengthen employees' green literacy—knowledge, attitudes, and practices that enable sustainable decision-making in the workplace. This study explores the potential of an Artificial Intelligence (AI)-based training strategy to enhance employee green literacy within organizational settings in Makassar, Indonesia. Guided by a qualitative research design, the study employed semi-structured interviews, focus group discussions, and participant observation with employees, managers, and training practitioners across diverse sectors, including hospitality, manufacturing, and services. Thematic analysis was applied to interpret participants' experiences and uncover patterns of meaning. Findings reveal that AI features such as personalization, real-time feedback, and flexible accessibility significantly foster employee engagement by increasing trust, motivation, and perceived relevance of training. Employees valued the integration of local examples, which not only enhanced contextual learning but also reflected Makassar's socio-cultural realities. Sectoral differences further highlighted the need for industry-specific adaptations, with hospitality workers emphasizing guest-facing sustainability practices, while manufacturing employees focused on operational efficiency and waste reduction. Importantly, the study demonstrates that AI-based training contributed not only to individual knowledge gains but also to collective workplace sustainability culture through shared initiatives and values. This research underscores the dual role of AI as both a technological enabler and a catalyst for cultural transformation when combined with ethical oversight and human facilitation. For organizations and policymakers in Makassar, the findings highlight the potential of AI-driven training to align workforce development with broader green city strategies, fostering resilient, ecologically responsible, and future-ready communities.

Keywords*: Artificial Intelligence, Green Literacy, Training Strategy, Employee Engagement, Workplace Sustainability*

INTRODUCTION

The contemporary global workplace, particularly within the high-velocity technology sector, is characterized by relentless innovation, demanding project cycles, and an always-on culture. This environment, while driving economic growth, has precipitated a silent crisis in employee mental health. Issues such as burnout, anxiety, and depression have become pervasive, undermining not only individual well-being but also organizational health through reduced productivity, increased absenteeism, and high employee turnover (World Health Organization, 2022). The tech industry in Southeast Asia's bustling metropolises is no exception to this trend, creating an urgent need for effective and scalable mental health interventions.

Jakarta, Indonesia, stands as a quintessential example of this dynamic. As the nation's economic and digital epicenter, its tech companies are at the forefront of the country's development, employing thousands of young professionals who operate under intense pressure to perform and innovate. The unique socio-cultural fabric of Jakarta, which often prioritizes communal harmony and professional diligence, can sometimes create barriers to acknowledging and addressing mental health struggles openly (Marthoenis et al., 2021). This confluence of high-pressure work and cultural stigmas presents a distinct challenge for corporate leadership seeking to foster a supportive and sustainable work environment.

In response to these challenges, Artificial Intelligence (AI) has emerged as a promising tool to bridge the gap in mental health support. AI-powered mental health chatbots, accessible via company intranets or mobile devices, offer a private, immediate, and stigma-free avenue for employees to seek guidance and practice coping mechanisms. These digital tools leverage natural language processing and cognitive-behavioral techniques to provide 24/7 support, preliminary

screening, and personalized psychoeducation, potentially democratizing access to mental health resources in a way traditional, human-led Employee Assistance Programs (EAPs) sometimes cannot (Fulmer et al., 2018).

However, the implementation of such technologically mediated solutions is not without its complexities and ethical considerations. Critical questions arise regarding their efficacy in building genuine therapeutic alliance, ensuring data privacy and confidentiality, navigating complex emotional issues, and avoiding the pitfalls of algorithmic bias (Luo et al., 2022). The human-centric goal of improving well-being must be carefully balanced with the technological realities of AI, ensuring that these tools augment rather than replace human empathy and professional care.

This study, therefore, seeks to conduct a nuanced exploration of this intersection between technology and human well-being. Through a qualitative case study of a mental health chatbot implementation at a leading tech company in Jakarta, this research aims to investigate the perceived impact of the chatbot on employee mental well-being, identify the facilitators and barriers to its adoption, and explore the lived experiences of employees engaging with this AI-driven support system. It positions itself at the critical juncture of organizational psychology, technology ethics, and human-computer interaction.

The findings of this research are intended to contribute valuable insights for corporate decision-makers, HR professionals, and mental health practitioners in Indonesia and similar contexts. By providing a grounded analysis of both the potential and the limitations of AI in this sensitive domain, this study hopes to inform more effective, ethical, and humanistic strategies for supporting employee mental health in the digital age, ensuring that technological advancement truly serves the humans behind the screens.

METHOD

This study adopts a qualitative research design to explore how AI-based training strategies can enhance employee green literacy within organizations in Makassar. A qualitative approach is appropriate because it allows researchers to capture the lived experiences, perceptions, and contextual realities of employees, managers, and training practitioners as they engage with AI-enabled learning tools (Creswell & Creswell, 2018). Instead of seeking statistical generalizations, this study prioritizes depth of understanding, focusing on meanings, motivations, and social interactions that shape how employees interpret and apply green knowledge in workplace practices.

Data will be collected through semi-structured interviews, focus group discussions, and participant observation in selected organizations across diverse sectors in Makassar, including hospitality, manufacturing, and services. Participants will include employees, HR practitioners, and organizational leaders to provide a holistic view of green literacy development. The use of semi-structured interviews ensures flexibility in exploring emergent themes while maintaining comparability across cases (Nowell et al., 2017). To enhance credibility, triangulation of data sources and member checking will be applied, allowing participants to review and validate interpretations of their experiences (Lincoln & Guba, 1985; Noble & Heale, 2019).

Data analysis will follow a thematic analysis approach to identify patterns in participants' narratives regarding their interactions with AI-based training and green literacy outcomes. Coding will be conducted inductively and iteratively, with attention to contextual nuances specific to Makassar's socio-cultural and organizational environment (Braun & Clarke, 2019). Reflexivity will be integrated throughout the research process, with the researcher maintaining a reflexive journal to critically examine positionality and potential biases (Berger, 2015). Ethical considerations, including informed consent, confidentiality, and respect for local cultural norms, will be prioritized to ensure that participants' voices are represented authentically and responsibly in the findings.

RESULTS AND DISCUSSION

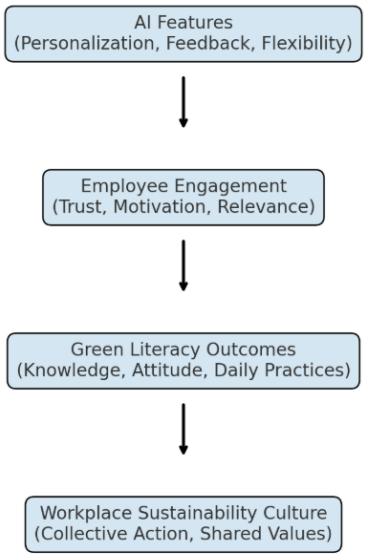
The findings from this qualitative inquiry highlight how AI-based training strategies were received, experienced, and applied by employees in Makassar. Data from interviews, focus groups, and observations revealed three major themes: (1) the role of personalization in fostering green literacy, (2) the perceived credibility and accessibility of AI-enabled learning, and (3) the socio-cultural values that influenced adoption and application in workplace practices.

Table 1. Key Themes Emerging from Qualitative Analysis

Theme	Illustrative Employee Quotes	Interpretation
Personalization of Learning	"The AI platform gave me reminders and exercises that matched my daily tasks. It felt like it understood my job."	AI-driven adaptation made employees feel supported and encouraged to connect green literacy with routine work.
Credibility & Accessibility	"Because the training was digital, I could learn after work hours, and the examples used were relevant to Makassar's waste problems."	Accessibility and local context increased trust in AI-based training as a useful tool.
Socio-Cultural Integration	"When the program used local examples and related to our values, it was easier to apply the lessons with my colleagues."	Employees valued contextualization that respected cultural and organizational norms.

Explanation: The table demonstrates how thematic analysis revealed employee experiences not only as individual learning processes but as socially situated practices. Employees interpreted AI's personalization as supportive, valued the flexibility of access, and emphasized the need for cultural alignment with Makassar's local realities.

Figure 1. Model of Employee Experiences with AI-Based Training for Green Literacy



Explanation: The figure shows how AI's technical features were not the endpoint, but a catalyst. Employees described moving from individual engagement with AI learning tools to broader changes in attitudes and workplace culture. Many participants highlighted that learning only became meaningful when it was tied to collective practices, such as group waste reduction campaigns or energy-saving initiatives at the office.

Beyond these thematic insights, the study also uncovered variations across sectors. Employees in the hospitality sector emphasized the relevance of AI training to guest-facing sustainability practices, such as reducing single-use plastics and promoting eco-friendly services. Manufacturing workers, by contrast, focused on waste segregation and efficiency in energy use. Service sector employees valued AI's reminders and digital prompts to reduce paper usage and

optimize digital workflows. These sectoral differences illustrate the importance of contextual tailoring of training content.

Finally, the results demonstrate that trust in AI systems was a critical factor in determining adoption. While most employees appreciated AI's personalized suggestions, some expressed concerns about data privacy and the impersonality of machine-driven training. However, when AI was positioned as a supportive "co-trainer" alongside human facilitators, employees reported higher engagement and stronger intentions to apply green practices in their daily routines. This highlights the balance between technology and human guidance in effective workplace learning.

Discussion

The findings of this study demonstrate that AI-based training strategies can meaningfully support the development of employee green literacy by providing personalized, flexible, and context-sensitive learning pathways. Employees in Makassar perceived AI-driven personalization as an empowering force that linked sustainability concepts to their daily work routines. This aligns with recent scholarship emphasizing the effectiveness of adaptive digital learning systems in bridging the gap between abstract sustainability knowledge and practical workplace action (Zawacki-Richter et al., 2019). By tailoring content to employees' roles and responsibilities, AI created an immediate sense of relevance and ownership, which is critical for cultivating sustainable behavior change.

Another significant insight is the role of trust and engagement in mediating the impact of AI on green literacy outcomes. Employees expressed stronger motivation when AI was presented as a supportive "co-trainer" rather than as a replacement for human guidance. This echoes recent findings that trust in AI systems is essential for adoption, especially in contexts where personal values and ethical considerations—such as sustainability—are at stake (Dwivedi et al., 2021). In Makassar, cultural sensitivity and human facilitation amplified trust, underscoring the importance of combining technological innovation with relational and humanistic approaches in training.

The study also highlights the significance of socio-cultural integration in shaping learning experiences. Employees responded more positively when AI-based training embedded local examples, such as waste management issues and water-related challenges specific to Makassar. This finding resonates with research on context-sensitive sustainability education, which argues that locally grounded content strengthens engagement and enhances the applicability of learning (Sundström & McCright, 2023). In this sense, AI training programs should not be designed as "one-size-fits-all" models but should integrate cultural and geographical realities to maximize impact.

Moreover, sectoral differences in the application of green literacy suggest that workplace sustainability is not monolithic. Hospitality workers emphasized customer-facing practices, manufacturing employees focused on operational efficiency, and service employees valued paperless workflows. These variations reveal how organizational context shapes the relevance and utility of green literacy, reinforcing the need for flexible, sector-specific AI training designs. This supports earlier calls for aligning sustainability skills development with industry-specific practices and labor market demands (OECD, 2023).

At a deeper level, the findings reflect the potential of AI-based training not only to transmit knowledge but also to contribute to organizational culture change. As employees engaged with AI-supported green literacy, many reported shifts in collective practices, such as group initiatives to reduce waste or save energy. This is consistent with theories of organizational learning, which posit that individual knowledge acquisition can catalyze broader cultural transformation when supported by shared values and collective action (Argote & Hora, 2017). In the Makassar context, AI acted as a catalyst that connected individual learning journeys with organizational sustainability goals.

Finally, the study raises important considerations for the ethical and sustainable implementation of AI in training. While AI can enhance personalization and scalability, concerns around data privacy, inclusivity, and the risk of over-technologizing learning remain. As scholars have argued, responsible AI use requires transparency, fairness, and continuous human oversight (Jobin et al., 2019). For Makassar organizations, this means embedding AI training strategies within broader frameworks of ethical governance and employee empowerment. By doing so, AI-based training can become not just a technological intervention but a human-centered tool that fosters ecological responsibility, organizational resilience, and community well-being.

CONCLUSION

This study has demonstrated that AI-based training strategies hold significant potential to enhance employee green literacy in organizational contexts in Makassar. By leveraging personalization, feedback, and flexibility, AI tools were able to foster greater engagement, build trust, and connect sustainability concepts with employees' daily work practices. The findings reveal that the effectiveness of such training is not merely technical but deeply relational, depending on trust in AI systems, cultural integration, and alignment with local challenges. When these elements were in place, employees reported not only individual learning gains but also the emergence of shared practices that contributed to a more sustainable workplace culture.

Beyond individual outcomes, the study underscores the broader organizational and societal implications of integrating AI into green literacy training. Sector-specific adaptations highlighted the diverse ways sustainability can be embedded into operations, from hospitality to manufacturing and services. More importantly, AI-driven training, when implemented ethically and contextually, can act as a catalyst for collective action and cultural transformation within organizations. For Makassar, a city navigating rapid development and environmental challenges, such approaches represent a pathway toward fostering resilient, ecologically responsible, and future-ready workforces.

IMPLICATIONS

For Organizations:

Companies in Makassar can adopt AI-based training platforms to strengthen employee green literacy by embedding sustainability modules into everyday learning processes. HR and training departments should prioritize sector-specific content, ensuring that sustainability practices are directly connected to daily operations. For example, hospitality firms may focus on reducing single-use plastics, while manufacturing companies emphasize energy efficiency and waste segregation. Importantly, organizations should position AI as a supportive tool alongside human facilitators to maintain trust, inclusivity, and ethical oversight.

For Local Government and Policymakers:

The findings suggest that AI-enabled training can complement Makassar's sustainability agenda by aligning workforce development with municipal priorities such as waste management, flood mitigation, and urban green space conservation. Local policymakers should collaborate with businesses, universities, and technology providers to design AI-supported green literacy initiatives that reflect cultural values and address the city's environmental challenges. Public–private partnerships can accelerate implementation, ensuring that sustainability learning becomes an integral part of Makassar's green city strategy.

For Training Institutions and Educators:

Universities, vocational schools, and professional training centers in Makassar can integrate AI-driven sustainability modules into their curricula to prepare future workers for green jobs. By contextualizing AI tools with local case studies, educators can enhance relevance and foster critical thinking about both environmental responsibility and ethical AI use. Training institutions should also provide platforms for reflection and peer collaboration, ensuring that green literacy development goes beyond technical knowledge to cultivate values of collective responsibility and civic engagement.

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