



Developing an ESD-Based HRM Learning Website: A Needs Analysis of Students' Sustainability Consciousness and Pro-Environmental Behavior

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ABSTRACT

Education for Sustainable Development (ESD) has become an essential approach to preparing graduates who can respond to contemporary environmental and social challenges. In higher education, integrating ESD into discipline-specific courses is crucial for fostering sustainability competencies that are relevant to students' future professions. Human Resource Management (HRM), as a compulsory course in the Office Administration Education program at Universitas Sebelas Maret (UNS), offers considerable potential for embedding sustainability perspectives through Green HRM. However, ESD has not yet been systematically incorporated into the course curriculum. This study reports the needs analysis phase of a broader Research and Development (R&D) project aimed at developing an ESD-based learning website for HRM instruction. Using a descriptive phenomenological approach, data were collected through in-depth interviews with eight purposively selected students and document analysis of the HRM course syllabus. The findings indicate that students possess only a basic understanding of sustainability, demonstrate fragmented sustainability values, and exhibit inconsistent pro-environmental behaviors. More importantly, they do not perceive a meaningful connection between HRM and sustainability due to the absence of ESD-related content in the curriculum. Participants also expressed a strong preference for an interactive digital learning resource that integrates sustainability concepts with HRM topics. These findings provide a clear empirical basis for developing an ESD-based website that supports sustainability consciousness and encourages pro-environmental behavior within the context of HRM learning.

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INTRODUCTION

Global sustainability challenges, including climate change, environmental degradation, and increasing social inequality, have intensified the demand for higher education institutions to prepare graduates who are capable of contributing to sustainable development. In response to these challenges, Education for Sustainable Development (ESD) has become a global educational agenda that seeks to equip learners with the knowledge, values, attitudes, and competencies necessary to address complex sustainability issues across various professional fields (Abo-Khalil, 2024; Ferguson, 2019; Macaione et al., 2026). The UNESCO ESD for 2030 Roadmap further emphasizes that sustainability should not be confined to environmental disciplines alone but should be embedded across all academic programs so that graduates, regardless of their field of study, are prepared to make responsible decisions in their future workplaces (UNESCO, 2020).

One discipline that holds considerable potential for advancing this agenda is Human Resource Management (HRM). Beyond its traditional role in managing recruitment, training, performance appraisal, compensation, and employee development, HRM has increasingly been recognized as a strategic function that shapes organizational culture and promotes sustainable organizational practices (Renwick et al., 2013). Through the implementation of Green Human Resource Management (Green HRM), HR professionals are expected to foster environmentally responsible behaviors, encourage sustainable decision-making, and cultivate a workplace culture that supports long-term organizational sustainability (Altassan, 2025; Faeni et al., 2025). Consequently, introducing sustainability perspectives during HRM education is becoming increasingly important to prepare graduates for the evolving expectations of modern organizations.

Despite the growing attention to Green HRM in organizational research, its integration into HRM education remains limited, particularly within Indonesian higher education. Existing studies have primarily examined Green HRM implementation in business organizations and industrial settings (Panggayudi & Mochklas, 2025; Setyadi et al., 2025; Wahyudi et al., 2025; Yakup et al., 2025; Yuliza et al., 2026) while relatively little attention has been given to how sustainability concepts can be embedded into HRM learning at the university level. As a result, many students may complete HRM courses with adequate managerial knowledge but without understanding how HRM contributes to organizational sustainability or how they, as future HR practitioners, can influence sustainable workplace practices.

This issue is also evident in the Human Resource Management course offered in the Bachelor of Office Administration Education Program at Universitas Sebelas Maret (UNS), Indonesia. As a compulsory course, HRM equips students with fundamental competencies in managing human resources within organizations. However, preliminary observations indicate that sustainability perspectives have not yet been systematically integrated into the course content. Consequently, students have limited opportunities to understand the relationship between HRM practices and sustainable

development or to recognize the role of HR professionals in advancing organizational sustainability.

Understanding students' existing sustainability profiles is therefore an essential first step before developing an appropriate educational intervention. Two constructs are particularly relevant in this context sustainability consciousness and pro-environmental behavior. Sustainability consciousness reflects an individual's awareness, understanding, and attitudes toward sustainable development, while pro-environmental behavior represents the extent to which those values are translated into everyday actions (Gericke et al., 2019; Puiu et al., 2026). Examining these two constructs allows educators to identify students' current strengths, existing gaps, and learning needs, thereby providing a stronger empirical foundation for designing learning resources that effectively integrate sustainability into HRM education.

This article presents the findings of a qualitative needs analysis conducted as the preliminary phase of a Research and Development (R&D) study focused on the development of an ESD-based learning website for the HRM course at UNS. The needs analysis was designed to answer three questions: (1) How do students in the HRM course conceptualize sustainability and its relationship to HRM? (2) What is the current state of sustainability consciousness and pro-environmental behavioral tendencies among these students? (3) What learning needs and preferences exist that would support the design of an ESD-integrated digital learning resource for the HRM course?

By anchoring ESD integration specifically within the HRM curriculum, this study responds to calls for discipline-specific, contextually grounded approaches to sustainability education in higher education, moving beyond generic environmental awareness campaigns toward learning experiences that connect sustainability to students' professional identities and future workplace roles.

LITERATURE REVIEW

Education for Sustainable Development (ESD)

Education for Sustainable Development (ESD) presents a vision of education seeking to empower people and increase agency to assume responsibility for creating sustainable futures, regardless of their chosen field of study (UNESCO, 2005). Education for Sustainable Development is a holistic approach that empowers learners of all ages with the knowledge, skills, values, and attitudes needed to address critical global challenges (Agbedahin, 2019; Araneo, 2024; Kioupi & Voulvoulis, 2019). UNESCO's ESD for 2030 roadmap identifies five priority action areas: advancing policy, transforming learning environments, building capacities of educators, empowering and mobilizing youth, and accelerating local level actions (UNESCO, 2020). In the higher education context, ESD is most effectively realized not through isolated standalone courses but through disciplinary mainstreaming, the integration of sustainability competencies within existing subject frameworks (Mokski et al., 2022; Shih et al., 2025).

ESD in higher education increasingly leverages digital technologies as both medium and pedagogy. Digitally mediated ESD resources, including interactive websites, virtual case studies, and simulation-based learning, offer affordances for engaging cognitive, affective, and behavioral dimensions of sustainability learning simultaneously, while accommodating diverse learning preferences and enabling self-directed, contextualized exploration (Donath et al., 2020; Leal Filho et al., 2026). For programs where sustainability has not been formally integrated, ESD-based digital resources represent a scalable and minimally disruptive entry point.

Green HRM and Sustainability in HRM Course

Green HRM refers to the alignment of HRM functions with organizational environmental sustainability goals. Renwick et al. (2013) identify three core dimensions of GHRM including developing green abilities (building employees' environmental knowledge and skills through green recruitment, training, and leadership development), motivating green employees (encouraging pro-environmental behavior through green performance appraisal, rewards, and incentives), and providing green opportunities (enabling employee participation in sustainability through involvement, empowerment, Green teams, and a supportive organizational culture). These dimensions are directly relevant to the learning content of an HRM course, providing concrete, professionally grounded contexts for ESD integration.

Despite the growing scholarly and practitioner attention to GHRM, its integration into HRM curricula in Indonesian higher education remains limited. Internationally, scholars such as Pawirosumarto (2026), Piwovar-Sulej (2026) and Yin (2025) have argued for a broader conceptualization of Sustainable HRM that encompasses social, economic, and ecological sustainability across the full spectrum of HRM functions. Embedding these perspectives in undergraduate HRM learning would equip future administrators not only with technical HRM competencies but also with the sustainability literacy required for responsible organizational citizenship.

Sustainability Consciousness

Sabah, Welbeck & Larbi (2025) mendefinisikan *sustainability consciousness* sebagai kombinasi antara pengetahuan, sikap, dan perilaku yang dilaporkan sendiri terkait dengan *sustainability development*. The tripartite model of sustainability consciousness proposed by (Gericke et al., 2019) comprising knowingness (cognitive understanding of sustainability challenges), attitude (affective orientation toward ecological values and future generations), and behavior (volitional disposition toward sustainable behavior). Those provide a comprehensive framework for assessing and designing sustainability learning outcomes. Research using the Sustainability Consciousness Questionnaire (SCQ) demonstrates that all three dimensions are developmentally malleable and responsive to educational interventions, but that they evolve at different rates and require distinct pedagogical approaches.

In a study conducted by Pauw et al. (2015), through a series of descriptive analyses and structural equation modelling, the results showed that ESD can influence

pupils' learning outcomes in terms of fostering Sustainability Consciousness (SC). SC is a level of awareness that encompasses the dimensions of knowledge, attitudes and individual behaviour towards sustainability, which is then expected to foster responsibility and encourage concrete action in sustainability (Eraslan et al., 2024; Sabah Welbeck & Larbi, 2025; Uleanya & Yassim, 2024). Students with a high level of sustainability consciousness are expected to demonstrate concern, responsibility and a commitment to engaging in sustainable development efforts (Ásványi & Gedeon, 2025).

Pro-Environmental Behavior

While sustainability consciousness reflects internal awareness and values, pro-environmental behavior (PEB) represents the observable actions through which those values are expressed. Pro-environmental behavior refers to voluntary actions that reduce environmental harm or contribute positively to environmental sustainability (Owusu-Agyeman & Aryeh-Adjei, 2024; Steg & Vlek, 2009). Such behaviors range from everyday practices, including reducing energy consumption and minimizing plastic use, to broader actions such as supporting environmental initiatives and advocating for sustainable organizational practices (Robertson & Barling, 2013).

Several behavioral theories explain how pro-environmental behavior develops. The Theory of Planned Behavior (Ajzen, 1991) suggests that behavioral intention is influenced by attitudes, subjective norms, and perceived behavioral control, whereas the Value-Belief-Norm theory (Stern et al., 1999) emphasizes the importance of environmental values, personal responsibility, and moral norms in shaping environmentally responsible actions. Together, these perspectives suggest that knowledge alone is insufficient to promote sustainable behavior; meaningful behavioral change also requires supportive values, social influences, and opportunities to translate intentions into practice.

Within organizational contexts, HRM has been identified as an important mechanism for encouraging pro-environmental behavior among employees. Green recruitment, environmental training, sustainability-oriented performance appraisal, and organizational support have all been shown to strengthen employees' environmental responsibility (Mesmer-Magnus et al., 2013; Puiu et al., 2026; Renwick et al., 2013). Introducing these perspectives during HRM education is therefore expected not only to improve students' individual environmental behavior but also to prepare them to foster sustainability within the organizations where they will eventually work.

ESD-Based Website as a Learning Medium

The increasing use of digital learning technologies has transformed how sustainability education is delivered in higher education. Among various digital platforms, educational websites offer flexibility, accessibility, and opportunities for self-directed learning, making them particularly suitable for integrating interdisciplinary topics such as sustainability. Previous studies indicate that digital

platforms can significantly improve students' sustainability knowledge, awareness, and engagement by providing interactive and contextually relevant learning experiences (Lange & Dewitte, 2022; Xu, 2025).

Compared with conventional classroom instruction, ESD-based websites enable the integration of various multimedia learning resources, including videos, interactive case studies, reflective activities, self-assessment instruments, and real-world organizational examples. These features allow students to simultaneously develop cognitive understanding, affective engagement, and behavioral intentions toward sustainability (Petra et al., 2016). Moreover, web-based learning supports learner autonomy by allowing students to access materials at their own pace while revisiting content whenever necessary.

The effectiveness of digital learning platforms is also supported by the Technology Acceptance Model (TAM), which argues that users' willingness to adopt educational technology depends largely on its perceived usefulness and perceived ease of use (Davis, 1989). Therefore, an ESD-based website designed for HRM learning should not only provide accessible and engaging digital content but also explicitly connect sustainability concepts with HRM practices that students are likely to encounter in their future professional careers. Such contextual relevance is expected to enhance both students' acceptance of the learning platform and the effectiveness of sustainability learning.

METHOD

This study employed a qualitative research design using a descriptive phenomenological approach to explore students' lived experiences and perceptions regarding sustainability within the Human Resource Management (HRM) course. A phenomenological design was considered appropriate because the study sought to understand how students interpret sustainability, perceive its relevance to HRM, and experience the existing learning process before the development of an educational intervention. As the preliminary phase of a broader Research and Development (R&D) project, this needs analysis provides an empirical foundation for designing an Education for Sustainable Development (ESD)-based learning website.

The study was conducted in the Bachelor of Office Administration Education Program, Faculty of Teacher Training and Education, Universitas Sebelas Maret (UNS), Indonesia. Participants were selected using purposive sampling to ensure that they possessed relevant learning experiences. The selection criteria included: (1) active undergraduate students from the 2022–2026 cohorts, (2) students who had completed or were currently enrolled in the HRM course, and (3) willingness to participate voluntarily in the study. Eight students met these criteria and were included as participants. This sample size is considered adequate for phenomenological inquiry, where emphasis is placed on obtaining rich and meaningful descriptions rather than statistical representation (Creswell & Poth, 2016).

Data were collected through two complementary techniques. First, semi-structured individual interviews were conducted to explore students' understanding of sustainability, perceptions of its relationship with HRM, current pro-environmental

behaviors, and expectations regarding digital learning resources. Each interview lasted approximately 45–60 minutes, was conducted in Bahasa Indonesia, audio-recorded with participants' consent, and subsequently transcribed verbatim. Prior to data collection, the interview guide underwent expert review by two university lecturers with expertise in educational research to evaluate its content relevance, clarity, and alignment with the research objectives. Feedback from the reviewers was incorporated to refine the wording, sequencing, and probing questions before the interviews were conducted.

Second, document analysis was undertaken to examine the HRM course syllabus and teaching materials, with particular attention to the extent to which sustainability perspectives, Green HRM concepts, and ESD principles had been incorporated into the formal curriculum. Combining interviews with document analysis enabled methodological triangulation and strengthened the credibility of the findings.

The interview transcripts were analyzed using the six-phase thematic analysis proposed by (Braun & Clarke, 2006), comprising data familiarization, initial coding, theme generation, theme review, theme definition, and report production. To further enhance analytical rigor, the coding process was guided by the sixteen-item quality checklist for thematic analysis developed by Ahmed et al. (2025). Data analysis combined deductive and inductive approaches. Deductively, the analysis was informed by the sustainability consciousness framework developed by (Gericke et al., 2019), encompassing knowingness, attitudes, and behaviors across environmental, social, and economic dimensions. Inductively, additional themes emerging from participants' experiences were identified to capture contextual issues related to HRM learning and sustainability integration. The trustworthiness of the findings was strengthened through member checking with selected participants and peer debriefing throughout the analysis process.

FINDINGS

Students Recognize Sustainability but Rarely Associate It with HRM

The interviews revealed that all participants possessed a basic understanding of sustainability, primarily associating it with environmental conservation practices such as reducing plastic waste, conserving energy, and maintaining environmental cleanliness. Their responses suggest that sustainability has become a familiar concept through everyday exposure to social media, public campaigns, and general education. However, this understanding remained largely disconnected from their academic learning in Human Resource Management.

None of the participants spontaneously identified HRM as a discipline that could contribute to organizational sustainability. Instead, HRM was consistently perceived as focusing on administrative functions such as recruitment, employee development, performance evaluation, and compensation. When participants were asked whether sustainability had ever been discussed within the HRM course, they unanimously

indicated that the topic had never been explicitly introduced. One participant explained:

"I know about sustainability from news and social media. But in HRM class, we never talked about it. I thought HRM was just about managing people. The only environmental aspect I could think of was using digital documents instead of paper" (Participant 7)

This perception was further supported by the document analysis. Examination of the HRM syllabus confirmed that sustainability competencies, Green HRM concepts, and Education for Sustainable Development (ESD) principles were absent from the intended learning outcomes, weekly topics, and recommended learning resources. Although the course comprehensively covered conventional HRM functions, no explicit connection was made between HRM practices and organizational sustainability.

These findings indicate that students' understanding of sustainability has developed independently of their formal HRM education, creating a substantial conceptual gap between environmental awareness and professional competence.

Sustainability Values Have Not Yet Become Part of Students' Professional Identity

Although participants expressed genuine concern about environmental issues, their sustainability values remained largely personal rather than professional. Most participants discussed climate change, plastic pollution, and environmental degradation as global concerns that affected society in general. However, they rarely perceived themselves as future HR practitioners who could actively influence sustainability within organizations.

A recurring theme across interviews was the feeling that environmental problems were too large for individuals to meaningfully address. As one participant stated:

"I care about the environment, but sometimes the problem feels too big. Maybe I can reduce my own waste, but I don't know whether someone working in an office can really make a difference." (Participant 3)

The document analysis further reinforced this finding. Neither the HRM syllabus nor the course materials contained learning activities designed to encourage students to reflect on sustainability as part of their future professional responsibilities. Consequently, sustainability remained an individual concern rather than an integral component of students' developing professional identity.

Pro-Environmental Behavior Remains Habitual Rather Than Intentional

Participants reported practicing several environmentally friendly behaviors in their daily lives, including carrying reusable bottles, reducing plastic bag consumption, conserving electricity and water, and occasionally separating recyclable waste.

Nevertheless, these behaviors appeared to be driven primarily by convenience, habit, or external circumstances rather than deliberate sustainability commitments. For example, one participant remarked:

"I separate my trash only when different bins are available. If there is only one bin, I usually throw everything together because that's easier." (Participant 2)

Several contextual barriers also emerged during the interviews. Participants described the limited availability of waste-sorting facilities on campus, the absence of visible sustainability practices among peers, and the lack of sustainability-related examples incorporated into classroom activities. Observation of the faculty building supported these perceptions, as waste disposal facilities did not distinguish between recyclable and non-recyclable waste.

Taken together, these findings suggest that students already demonstrate positive environmental habits but have not yet developed consistent pro-environmental behaviors grounded in sustainability values or professional responsibility.

Students Express Strong Demand for an ESD-Based Learning Website

Perhaps the strongest finding across all interviews was participants' unanimous enthusiasm for a digital learning resource that explicitly integrates sustainability into HRM learning. Students consistently described digital platforms as their primary source of information about sustainability and expressed a preference for interactive learning materials rather than conventional lecture slides.

Participants emphasized that a website combining Green HRM concepts with real organizational case studies, videos, self-assessment activities, and practical examples would make sustainability more relevant to their future careers. As Participant 6 explained:

"If there were a website explaining Green HRM using real company examples, I would definitely use it because it would make HRM feel more relevant to environmental issues."

Similarly, Participant 4 noted:

"Most of our learning still depends on PowerPoint presentations and classroom discussions. Having an interactive website would make learning more interesting and easier to understand."

These findings indicate that students not only recognize the absence of sustainability content within the HRM course but also perceive an ESD-based learning website as a practical solution for bridging this gap.

DISCUSSION

The findings collectively demonstrate that students' sustainability awareness has developed independently from their formal HRM education. Although participants exhibited basic environmental knowledge and generally positive attitudes toward sustainability, these dispositions were not translated into professional understanding of how HRM can contribute to sustainable organizational development. This

disconnect reflects a broader curriculum issue in which sustainability remains peripheral rather than embedded within disciplinary learning. Consistent with UNESCO's ESD for 2030 framework, sustainability education becomes most meaningful when learners understand its relevance within their future professions rather than viewing it as a separate environmental topic (UNESCO, 2020).

The absence of sustainability perspectives within the HRM curriculum appears to have influenced all three dimensions of sustainability consciousness proposed by (Gericke et al., 2019). Students demonstrated limited knowingness because their understanding of sustainability was restricted primarily to environmental conservation without recognizing the strategic role of HRM in supporting organizational sustainability. Likewise, their attitudes reflected concern for environmental problems but lacked a sense of professional responsibility as future HR practitioners. Finally, their reported behaviors consisted largely of routine environmental practices that were disconnected from intentional sustainability commitments within organizational contexts. These findings reinforce previous studies indicating that educational experiences play a crucial role in simultaneously developing sustainability knowledge, values, and behavior (Eraslan et al., 2024; Pauw et al., 2015).

The study also highlights the untapped potential of Human Resource Management as a vehicle for Education for Sustainable Development. Existing HRM learning already addresses recruitment, training, performance appraisal, employee development, and organizational culture, all of which align closely with Green HRM practices proposed by Renwick et al. (2013). Rather than introducing sustainability as additional content, integrating Green HRM into existing HRM topics would enable students to understand sustainability through authentic professional contexts. Such an approach reflects disciplinary mainstreaming, which has been widely recommended as an effective strategy for implementing ESD in higher education.

Another important finding concerns students' preference for digital learning resources. Participants consistently described websites, social media, and online videos as their primary sources of sustainability knowledge, suggesting that digital platforms already shape how they access and process environmental information. This preference aligns with previous studies demonstrating that web-based learning environments can effectively promote sustainability awareness through interactive and self-directed learning experiences (Donath et al., 2020; Xu, 2025). Therefore, developing an ESD-based learning website represents not merely a technological innovation but a pedagogically appropriate response to students' existing learning habits.

Importantly, the proposed website should extend beyond functioning as a repository of learning materials. Guided by transformative learning principles (Blake et al., 2013), it should encourage students to critically reconsider the role of HR professionals in advancing sustainability, reflect upon their own environmental values, and apply Green HRM principles through authentic organizational case studies. Interactive features such as self-assessment instruments, reflective activities, multimedia content, and real-world examples can support the simultaneous

development of sustainability consciousness and pro-environmental behavior while strengthening students' professional identity as future HR practitioners.

CONCLUSION

This study demonstrates that students enrolled in the Human Resource Management course possess basic awareness of sustainability issues but have not yet developed a comprehensive understanding of how sustainability relates to their future professional roles. Their sustainability consciousness remains fragmented, while pro-environmental behaviors are generally practiced as everyday habits rather than as intentional actions grounded in professional responsibility. These findings indicate that sustainability has yet to become an integral component of HRM learning within the Bachelor of Office Administration Education Program at Universitas Sebelas Maret.

The study further identifies the absence of Education for Sustainable Development (ESD) and Green HRM perspectives within the existing HRM curriculum as the primary factor contributing to this gap. Although students demonstrated positive attitudes toward sustainability and expressed willingness to learn more about the topic, the current curriculum provides limited opportunities for them to connect sustainability principles with HRM functions or to recognize the strategic role of HR professionals in promoting organizational sustainability.

Another important finding is students' strong preference for interactive digital learning resources that contextualize sustainability within HRM practices. Participants consistently viewed an ESD-based learning website as a practical, engaging, and relevant medium for supporting their learning. This suggests that integrating sustainability into HRM education requires not only curriculum enhancement but also learning media that align with students' digital learning preferences and facilitate meaningful engagement with sustainability issues.

Although this study was conducted within a single study program involving a relatively small number of participants, the findings provide valuable insights for curriculum development in vocational higher education. Future studies may extend this work by quantitatively measuring changes in sustainability consciousness following the implementation of the ESD-based website or by examining similar interventions across different academic disciplines. Such investigations would contribute to a broader understanding of how discipline-specific ESD initiatives can prepare graduates to address sustainability challenges within their respective professional contexts.

Overall, this needs analysis provides both empirical evidence and pedagogical direction for the next stage of the Research and Development project, namely the design and development of an ESD-based learning website for the HRM course. By integrating Green HRM principles with interactive digital learning, the proposed website is expected to strengthen students' sustainability consciousness, encourage more intentional pro-environmental behavior, and prepare future office administrators and HR practitioners to contribute to sustainable organizational development. Beyond its immediate context, this study also offers insights for higher

education institutions seeking to embed sustainability into discipline-specific curricula through contextually relevant and technology-enhanced learning innovations.

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