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GREEN LEADERSHIP IN EDUCATION: AN ANALYSIS OF EDUCATIONAL LEADERSHIP AND MANAGEMENT CURRICULUM FOR SUSTAINABLE DEVELOPMENT

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Abstract

The education for Sustainable Development (ESD) has developed in higher education as it aims to provide students with the knowledge, skills, values and attitudes necessary for addressing environmental and sustainability challenges. In higher education, curriculum is a key factor in introducing prospective teachers to the idea of sustainability and building capacities that might enable them to help facilitate environmentally responsible leadership. This study aimed to explore how the Educational Leadership and Management (ELM) program is aligned to green leadership as reflected in the environment SDG of the Sustainable Development Goals (SDGs). Content analysis was used for data analysis. The outline of the BS ELM courses served as the first source of data. The course titles, course descriptions, learning outcomes and course contents were carefully analyzed and assessed for explicit and implicit mentions of environmental sustainability and its connection to green leadership. The researcher concluded that there was presence of concepts related to environmental sustainability in the courses, but that these concepts were not consistently integrated throughout the BS ELM curriculum. The researcher suggests that curriculum developers and higher education institutions enhance sustainability-related topics and learning opportunities, as a means to better equip future education leaders to be "green leaders."

Introduction

Education for Sustainable Development (ESD) has become a more important part of the mission of Higher Education institutions over the last few years, in the sense that it prepares learners to be able to effectively cope with complex environmental, social and economic challenges. ESD aims to foster knowledge, skills, values, attitudes and competencies for the purpose of contributing to sustainable development and for making responsible choices for current and future generations (UNESCO, 2021; Riekmann, 2017). Higher education institutions play a special role in this process, with the preparation of future professionals, educators, managers and leaders who are able to influence educational institutions and society in general towards sustainable practices (Adams et al., 2023).

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The contribution of higher education to sustainable development goes beyond information about environmental issues. Universities are expected to develop learning spaces that involve sustainability in learning content, teaching and learning, institutional policies, research and community outreach (UNESCO, 2021; Zilahy et al., 2009). An important element of curriculum is the knowledge, concepts, competencies and values that students are expected to learn as they prepare for a career. Therefore, a consideration of the content of the curriculum is essential to understanding the degree of embedding of sustainability in professional preparation programs (UNESCO, 2021). The environmental aspect of sustainable development is particularly pertinent for the present day education as various aspects of climate change, environmental degradation, biodiversity loss, pollution, resource depletion and unsustainable production and consumption patterns have a significant impact on communities and institutions today (Mula & Tilbury, 2009). ESD aims to equip the learners with the awareness and ability to engage in solutions that is sustainable. UNESCO (2021) gives attention to the need to build competencies through education that help students to participate in sustainable development and address environmental challenges.

In this context, green leadership has been identified as a key concept in sustainability research. Green leadership is leadership that makes environmental responsibility a part of decision making, organization practices, strategy and the creation of environmentally responsible behavior (Ali, 2019; Zhong et al., 2023). By raising awareness about the environment, encouraging sustainable practices, responsible resource utilization, and community efforts to achieve environmental sustainability, green leaders can shape peoples' decisions and actions (Al-Zawahreh et al., 2019). Green leadership is therefore especially relevant to educational leadership, in that school and higher education leaders can help change the culture of the school, institutional policies, resource management and the environmental behaviour of teachers and students (Ali, 2019; Al-Zawahreh et al., 2019).

Education is a field where the connection between ESD and green leadership is very important. Future teachers are teachers-to-be and for many, future educational leaders. For this reason, they taught about the environment in terms of sustainability and their ability to apply sustainability in education (Diep & Hartmann, 2016). An integrated environmental sustainability curriculum can provide prospective teachers with basic sustainability concepts and ideas that can assist them in making more sustainable decisions and providing leadership in education (Kalsoom et al.,, 2019). The Sustainable Development Goals serve as a globally shared set of goals to tackle sustainability issues. The SDG 4 supports for quality education and Target 4.7 on education for sustainable development and knowledge and skills for supporting sustainable development (Kalsoom et al., 2017). Other goals are also directly related to the environment, such as SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). These objectives serve as a good starting point for an analysis of what the concept of environmental sustainability means to education. Hence, the study is specifically devoted to analyze the curriculum of BS Educational Leadership and Management (BS ELM) programme with green leadership.

Problem Statement

Leadership is essential for promoting sustainable practices. But the level of integration of green leadership in higher education programs needs to be increased, which means that future leaders in the field of education may not necessarily be prepared to face environmental issues. This could lead to a lack of environmental knowledge, ability to practice good habits, and ability to address

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environmental challenges. It is necessary to analyze the curriculum alignment of the BS ELM program. Concepts of the environmental sustainability that are related to green leadership are necessary element to include in curriculum. As a result, it is important to investigate the alignment of curriculum with ESD and green leadership to determine gaps and to enhance the development of future educational leaders.

Objectives of the Study

The objective of the study was:

1.To analyze the alignment of the BS ELM program curriculum with green leadership through SDGs.

Research Questions

The research question of the study was;

1.How BS ELM program curriculum aligned with green leadership through SDGs?

Literature Review

Education for Sustainable Development in Higher Education

Education for Sustainable Development (ESD) is a pedagogical approach that helps learners develop knowledge, skills, values and attitudes needed for sustainable development. According to UNESCO (2021), ESD is an important way to help students solve interrelated problems such as climate change, biodiversity loss, environmental degradation, inequality and unsustainable consumption and production. ESD the focus is more than on the transfer of environmental information; it is concerned with building competencies that may help learners engage in sustainable decision making (Rieckmann, 2017). Higher Education Institutions can play a meaningful part in promoting ESD as they are responsible for educating people who will shape professional practices, organizational decisions and social development (Adams et al., 2023). Integrating sustainability concepts into academic programs, research, institutional practices and community engagement are ways in which universities can contribute to sustainability (Zilahy et al., 2019). Sustainability's incorporation into the curriculum is one of the most significant ways in which sustainability can be integrated into higher education, as it shapes the knowledge and skills that are experienced by students in their learning (Glavic, 2020).

Curriculum and Sustainability

Sustainability oriented education is considered to be a curriculum integration. Sustainability related concepts can be integrated into disciplinary courses, not only to separate environmental courses. Mulà and Tilbury (2009) highlight the importance of sustainability themes as a point of entry for different disciplines to become involved in sustainable development. Through such integration, students can relate their knowledge of a particular discipline to other environmental, social and economic issues. Thus, the analysis of curricula can be used to evidence the degree to which sustainability is present in an academic program. By analyzing course descriptions, learning outcomes and contents, it can be determined whether sustainability is taught explicitly or whether there is an indirect reference to sustainability in existing courses (Adams et al., 2023). Additionally, UNESCO (2014) highlights the promotion of sustainability issues, such as climate change, biodiversity, disaster risk reduction and sustainable consumption in education.

From a education perspective, curriculum integration is significant because a teacher's ability to share sustainability knowledge and practices with students and in the educational community could be influenced by their experiences in the educational program (Kalsoom et al., 2019). This means that a sustainable curriculum can help to raise not only the awareness of the students but also the consciousness of sustainable education in general. SDG 13 is closely linked to the majority of the other goals. SDG 13 is closely connected with most of the other goals. The Sustainable

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Development Goals are a set of 17 goals that address sustainable development challenges around the world. Some of the SDGs have a particularly strong environmental dimension, whilst all SDGs are interconnected. The SDG 6 is dedicated to clean water and sanitation, SDG 7 on affordable and clean energy, SDG 11 on sustainable cities and communities, SDG 12 on responsible consumption and production and SDG 13 on climate action. Ideally, these goals can be used as dimensions to explore the issue of environmental sustainability in the curriculum. SDG 4 is also directly relevant, since Target 4.7 focuses on the education for sustainable development and the creation of knowledge and skills for sustainable development (Diep & Hartmann, 2016; Rieckman, 2017). Therefore, curriculum mapping with SDGs of the environment can be viewed as an important element in the preparation of students for professional and leadership positions related to sustainability.

Green Leadership & Sustainability

Green leadership focuses is on integrating environmental responsibility as a part of leadership processes and decision making in organizations. Green leaders promote sustainable behaviors, contribute to crafting sustainable visions, and inspire organizational members to engage in green practices. Zhong et al. (2023) explain green leadership as "the attitude of a leader towards environmental responsibility and encouraging environmentally friendly behaviors. Educational leaders have an impact on the culture, policies, resource management and organizational behavior in educational institutions, which make green leadership more relevant to learning institutions (Ali, 2019). Responsible actions for educational institutions towards the environment can be efficient use of energy and water, responsible consumption, reduction of waste, recycling, environmental awareness and the creation of sustainable institutional practices (Al-Zawahreh et al., 2019). Environmental awareness alone is insufficient for fostering green leadership. To develop green leadership, more than environmental awareness is needed. Pro-environmental competency was conceived by Corral-Verdugo (2002) in relation to the environmental responsibility of behavior and by Diep and Hartmann (2016) on the teachers' green skills as an element of education. The concept of environmental sustainability must be discussed in the workplace and organizational settings (Ones & Dilchert, 2012). So, the education leadership training programme can play a role in the development of green leadership by providing environmental knowledge, skills, ability, attitude, awareness, and responsible attitude to the prospective leaders of the education sector (Al-Ghazali et al., 2022).

There have also been studies that have shown how employees or organizational members' environmentally responsible behavior is linked to leadership. Leaders can shape environmental behavior by creating positive working conditions for the environment, by communicating a message about the environment and ensuring that members are involved in environmental programs (Lamm et al. 2016; Norton et al. 2017; Robertson & Barling, 2015). Thus, training educators to become aware of the concepts of environmental sustainability could make a contribution to the creation of greener educational organizations.

Green Leadership in Higher Education

Higher Education is a key setting for cultivating future change agents. Teachers can impact the knowledge, attitudes and behaviors of students in their environment, and potential leaders of educational institutions can impact the sustainability practices of the institution (Kalsoom et al., 2019). Educational programs, therefore, should offer opportunities to interact with issues of sustainability. Integrating green leadership into educational leadership training programs can help future educational leaders grasp environmental issues and integrate

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sustainability into educational organizations' decision-making frameworks. But the inclusion of ideas of the environment in a curriculum does not guarantee systematic integration of green leadership (Ali, 2019; Zhong et al., 2019). Content analysis is therefore helpful in analyzing the representation of environmental sustainability and green leadership throughout courses.

Research Methodology

Research Design

The study adopted a content analysis approach to analyze the curriculum of the Educational Leadership and Management program (BS ELM) with green leadership in terms of the environmental aspect of the sustainable development goals. Content analysis was deemed suitable because the study aimed to systematically analyze the representation of the concepts of environmental sustainability in curriculum documents and their meaning rather than to measure the participants' perception or competence of environmental sustainability.

Source of Data

The main source of data was BS Educational Leadership and Management (BS ELM) courses outlines. The documentary data for the study were the outlines of the course. There were 46 courses (132 credit hours) in the BS ELM program. The program consisted of General Courses, Interdisciplinary Courses, Capstone project, Internship and Major Courses. The course outlines contained the textual content essential for the analysis of the representation of environmental sustainability in the program.

Data Collection

The researcher acquired the BS ELM course outlines. Course outlines for the whole program were gathered and used as documentary sources. The documents were systematically reviewed to extract related content to curriculum in environmental sustainability, environmental aspects of SDGs as green leadership.

Data Analysis

The data were analyzed using content analysis. The study was delimited to the BS ELM courses outlines as well as course titles, course descriptions, learning outcomes and instructional/course content. Environmental sustainability related statements, concepts, themes and topics were identified and analyzed in relation to the green leadership and environmental component of SDGs.

The analysis was systematic. The researcher first read all the course outlines to familiarize with the course content. Second, the appropriate parts of the text were located in relation to environmental sustainability. Third, the identified content was coded based on its meaningfulness and pertinence to environmental sustainability and green leadership. Thirdly, related codes were aggregated into wider code categories which are linked to relevant SDGs in the environment. Lastly, to know how and where the concept of environmental sustainability and green leadership was presented throughout the BS ELM curriculum, the content of individual courses was analyzed.

The content analysis was geared especially towards the following themes related to SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). These SDGs were taken as the educational basis for curriculum alignment. Alignment was achieved by interpreting the content of the actual curriculum and by identifying explicit or implicit links between the content of the curriculum, environmental sustainability and green leadership.

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Content Analysis

A content analysis of the BS Educational Leadership and Management (BS ELM) course outlines showed that environmental sustainability was covered partial in the courses throughout its curriculum. The analysis focused on the course titles, course description, learning outcomes and contents of the courses for the purpose of identifying concepts which could be related to environmental sustainability and green leadership. The results were explained in the context of the environmental dimension of the Sustainable Development Goals (SDGs). The analysis showed there was directly consistent theme of environmental sustainability throughout all courses but there is indirect link present in different coureses. Rather, sustainability-related ideas were integrated into specific courses and topics, explicitly in the specific mention of environmental issues, and implicitly in the concepts of responsible citizenship, organizational development, social responsibility, technology, community development, and institutional practices. This implies that while some aspects of sustainability-related ideas are included in the BS ELM curriculum, they are indirectly integrated as a core concern of the curriculum.

Table 1

Inclusion of environmental SDG and green leadership in BS ELM curriculum

Environmental SDG	Focus on Sustainability	Inclusion in BS ELM Curriculum	Relevance to Green Leadership	Interpretation
SDG 6: Clean Water and Sanitation	Water conservation, sanitation, hygiene and responsible use of water resources	Partial inclusion	Institutional resource management, health and well-being, sustainable campus practices	Institutional and community related content is an indirect access to water-related sustainability concepts.
SDG 7: Affordable and Clean Energy	Conservation, efficiency, renewable energy and responsible use of energy.	Partial inclusion	Implementing sustainable infrastructure, energy management and institutional planning	The concept of energy sustainability is not always made explicit, but is linked to the management of institutional resources and facilities.
SDG 11: Sustainable Cities and Communities	Sustainable communities, resilience, community development, responsible citizenship	Moderate inclusion	Engagement of the community, building institutional capacity, planning for sustainability	This dimension has relatively wider conceptual linkages in the areas of community development and responsible institutional practices.
SDG 12: Responsible Consumption and Production	Resource efficiency and reducing waste, sustainable consumption and responsible	Partial inclusion	Resource Allocation, Purchase, Waste Management, Operation Decision	There is an opportunity for connection with responsible resource management in the curriculum, but there is a lack of sustainability-focused

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Environmental SDG	Focus on Sustainability	Inclusion in BS ELM Curriculum	Relevance to Green Leadership	Interpretation
	procurement.		Making	practices.
SDG 13: Climate Action	Climate awareness, mitigation, adaptation and environmental action.	Partial inclusion	Climate-responsive planning, institutional resilience, environmental policy and leadership	Climate action is the most 'invisible' environmental dimension, needing to be more explicit in the leadership education process.
Curriculum Alignment of all courses	Environmental sustainability and green leadership.	Uneven and predominantly indirect	Strategic planning, decision making, governance and resource management, organizational culture.	There is a lack of systematic occurrence of environmental sustainability in the BS ELM curriculum that makes it the only program that doesn't offer a strong foundation in sustainability-oriented leadership.

The results in Table 1 show that there is a indirect inclusion of environmental SDG and green leadership in BS ELM curriculum. Environmental SDGs were indirectly aligned with cleanliness, resource utilization, community development and environment education. There was a higher alignment of environment sustainability, with Science of Global Challenges having a higher percentage of representation of water, energy, sustainable communities, responsible resource use and climate change. Other courses offer primarily indirect linkages via civic involvement, organizational culture, technology and ethical responsibility. So, the courses were integrating environmental sustainability and green leadership. The courses were mainly focused on civic and education development, and SDG11 has widely aligned. Environmental SDGs were covered and indirectly mentioned (apart from Civic and Community Engagement where sustainability issues are more widely covered). The results suggest that the environmental content is course-specific and that it is not always integrated throughout the semester.

The opportunities exist to link environmental sustainability with educational leadership to a greater extent. Educational Leadership and Management establish connections with resource allocation, sustainable school practices, and awareness of the environment; Introduction to Law and Contemporary Trends and Issues in Education makes indirect connections. Overall, the SDGs on environment are still underrepresented and sustainability concepts are present mostly in the leadership, governance and institutional approaches. There are links between environmental issues and economics, ethical teachings, pedagogy and school management. Learning about the Qur'an links to cleanliness, moderation and caring for the environment, and School Management has links to the allocation of institutional resources and school practices with regard to sustainability. However, the incorporation of SDGs, shows that there was indirect alignment throughout the semester.

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Some courses have better practical and professional alignment with environmental sustainability. The Global Citizenship Education was a general approach to SDGs related to the environment, and the Human Resource Management in Education and Field Experience Internship has indirect connections through institutional practices and school-based activities. Overall, the results indicated that environmental sustainability seems to be more prominent in the applied and professional courses than in the subject-specific pedagogy courses. Courses focus on quality education, educational research, quality assurance and educational planning, while environmental sustainability is integrated primarily in the form of potential applications. Environmental SDGs include resource efficiency, sustainable institutional practices and climate-responsive planning. The results therefore indicate that the concept of sustainability has conceptual relevance in the task of the educational leader, but that this is not clearly expressed in all courses. There are opportunities for integrating environmental sustainability through Long Internship and Capstone Project. Both courses are linked to SDG 6, 7, 11, 12, 13 and dependent on internship activities and project.

Discussion

The findings depicts that there is evidence of partial alignment of environmental sustainability within the BS ELM curriculum, although this is mostly indirect and unevenly integrated. The finding is notable because the goal of ESD is to go beyond the individual sustainability concepts and provide learning opportunities for students to understand and respond to the challenge of sustainability (UNESCO, 2021; Rieckmann, 2017). The results might be compared to the whole-institution approach to ESD that is developing. UNESCO (2026) contends that for sustainability transformation, institutions must go beyond embedding sustainability in curriculum and include it in the learning process, institutional governance, operations, research, community engagement and institutional culture. The results support the main thrust of the argument for embedding sustainability into the curriculum in a more pervasive way than in single courses. Higher education institutions play an important role in embedding sustainability in their curriculum as they are training the future professionals and leaders that shape the way organizations and societies practice (Adams et al., 2023). The interpretation is also supported by the systematic review of ESD in higher education (Ncube et al., 2026). The review challenges leadership, pedagogy, and curriculum as interwoven aspects of ESD integration and argues that incorporating sustainability within higher education is not a standalone educational issue, but is better understood as a role for leadership and pedagogy (Ncube et al., 2026).If sustainability issues are integrated throughout disciplines, they blend their job duties and sustainable development. It also suggests that the environmental SDGs might be used as a tool to understand what is included in the curriculum in relation to sustainability. SDGs 6, 7, 11, 12 and 13 are the five environmental SDGs that aim at water, energy, communities, consumption and climate action. Incorporating these elements into education leadership training will contribute to the awareness of future leaders. Environmental responsibility is not a distinct aspect of education management but an integral factor of responsible leadership of educational institutions (Adams et al., 2023).

Green leadership involves making environmental concerns a part of organizational goals, policies, decision-making and practical activities (Zhong et al., 2023). Educational leaders have the potential to shape the environmental culture of schools and higher education institutions in a number of ways, including: Resource management, Environmental policies, Staff engagement, Student involvement, and Sustainability planning (Novawan & Aisyiyah, 2020). Thus, sustainability is indirectly addressed in the BS ELM

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curriculum; a greater integration of sustainability into the curriculum. The sustainability leadership education is another field of environmental knowledge but also as closely related to governance and leadership competencies (Md Noor et al., 2026). Dube (2026) revealed that higher education programs needed to be more explicit in the integration of SDGs and more strongly link curriculum design, learning outcomes, assessment, and practical problem solving.

Educational leaders must be able to grasp environmental threats and lead institutional actions in response to climate change (Coral-Verdugo, 2002). Schools might help to promote climate change in several ways, including by raising awareness about climate change, minimizing the use of resources, encouraging sustainable practices, and educating students to take part in environmental solutions (Ones & Dilchert, 2012). Increased focus on climate action in the curriculum, therefore, may enhance the environmental leadership capacity of educational leaders. Educational leaders impact the consumption within the institution as a whole through resource allocation, infrastructure, technology, purchasing, waste management, and operations. A more explicit reference to SDG 12 in leadership education may help future leaders know how leadership decisions support or alleviate environmental responsibilities.

Conclusions

It is concluded that there are various levels of BS ELM curriculum content related to environment sustainability. There are opportunities in some of the content of courses to link educational leadership to issues of environmental responsibility, sustainable use of resources, community development, responsible practice, and other sustainability issues. The embedding of environmental sustainability and green leadership, were indirectly included throughout the curriculum, and some environmental aspects of the SDGs need to be more aligned.

The researcher concludes that the BS ELM course is a foundation for sustainability-based educational leadership, but there is a need for more focused and robust inclusion of green leadership concepts into the course. Especially, there might be a linkage between environmental sustainability and leadership, decision-making in organizations, strategic planning, management of institutional resources, and environmentally responsible practices. Fostering such links might equip future educators and learners with the skills to be more effective in building sustainable future.

Recommendations

Based on the content analysis results, it is recommended that administration and curriculum developers might:

1. Make green leadership an integral component of the BS ELM curriculum. Green leadership might be integrated into the respective education leadership and management courses instead of being a sustainability concept.
2. Relate environmental sustainability to leadership practices. Students may have the opportunity to learn about the ways in which educational leaders might encourage energy conservation, water usage, waste reduction, responsible consumption, climate action, and institutional development that is sustainable.
3. Incorporate hands-on green leadership activities. For prospective leaders, practical application of theory might be helped through case studies, institutional sustainability projects, environmental audits, problem solving activities and community based projects.

Limitations of the Study

The study was partial to the BS Educational Leadership and Management course and the official course outlines. The results are therefore based on the formal curriculum that is presented in the documents and do not necessarily reflect all classroom practices, teaching strategies or informal learning opportunities. Moreover, the

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study investigated curriculum alignment, not the students' real green leadership competencies. Future studies might focus on how sustainability content in the curriculum is delivered to the classroom and the effect of green leadership skills among prospective teachers.

Implications of the Study

The study has tremendous implications for administration and curriculum developers. Findings at the curriculum level highlight the need to shift from implicit sustainability to more explicit consideration of the environment in curriculum, as well as green leadership. The institutional level, where educational leadership programs may help to connect academic learning with environmentally responsible institutional practices, supports sustainability. The administration might highlights the role of environmental leadership, decision making and organizational practice.

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