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System Thinkers: The Critical Role of Management Faculty in Advancing Student Understanding of Sustainability

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Abstract

This review emphasizes the crucial relationship between sustainable education and system thinking in the context of management faculty, underscoring the need for interdisciplinary collaboration and innovative teaching methods. The study explores how management educators help students gain a deeper grasp of social sustainability at a time when the G-20 is leading the charge to support global education sustainability. The paper emphasizes the critical role educators play in fostering a systemic viewpoint through an examination of successful educational tactics and practical implementations. The paper's focus on these essential components is in line with the G-20's objective of developing a generation that can effectively tackle intricate global issues.

Keywords: Sustainable Education, System Thinking, Interdisciplinary Collaboration, Innovative Teaching Methods, Societal Sustainability.

1. Introduction

In a time characterized by enormous global hurdles, including environmental crises and complex cultural and economic issues, there is a critical need to develop knowledgeable and socially conscious individuals (Behie et al., 2023). This need has become extremely important. In a rapidly changing world, the importance of education is becoming more and more apparent. People now recognize sustainability education as a crucial aspect of developing the skills and mindset needed to address difficult global problems (Taimur & Sattar, 2020).

In this complex environment, the impact of management faculty stands out because these educators act as change agents, imparting knowledge while also establishing moral principles and encouraging critical thinking (Sharma et al., 2023; Brookfield, 2017; Sachs, 2005). The growth of a systems-thinking perspective is crucial in this transformative process, as it allows pupils to understand the interdependence of environmental, social, and economic factors (Spain, 2019). This study explores the complex connection between sustainability education and management faculty, emphasizing the significant influence of fostering a comprehensive understanding that goes beyond conventional disciplinary limits.

In addition, the G-20's strong dedication to promoting global education sustainability, as seen by their contributions to the 2030 Agenda and the 2021 G20 Education Ministers' Declaration, is an important aspect to examine in our analysis. This study attempts to clarify the precise role of management faculty in connecting educational objectives with worldwide agendas, as envisioned by the G-20. This review sets the stage for a thorough examination of the key factors that contribute to the development of a generation capable of addressing the complex challenges of the 21st century. It does so by considering a wide range of challenges, highlighting the importance of sustainability education, and acknowledging the influential role of management faculty.

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2. Literature Review

2.1. The Concept of Sustainable Education

Sustainable education stands as a holistic and transformative approach to learning that extends far beyond the conventional confines of academia (Kopnina, 2018). At its core, it involves the intentional cultivation of knowledge, skills, and values aimed at fostering environmental stewardship, social responsibility, and economic resilience (Glasser & Hirsh, 2016). This section of the paper endeavors to unravel the intricate facets encapsulated within the definition and expansive scope of sustainable education, shedding light on its transformative potential within the broader educational landscape.

2.1.1. Definition and Scope

The multifaceted nature of sustainable education sets it apart, emphasizing both the acquisition of academic knowledge and the development of a sustainable mindset (Molderez & Ceulemans, 2018; Molderez & Ceulemans, 2018). Education for Sustainable Development goes beyond conventional disciplines by integrating multidisciplinary viewpoints to tackle the interrelated difficulties encountered by modern society (Annan-Diab & Molinari, 2017; Lozano et al., 2017). Sustainable education involves the preservation of the environment, fairness in society, and economic sustainability. Its goal is to cultivate a sense of responsibility and consciousness in learners (Kopnina, 2020; Kioupi & Voulvoulis, 2019).

2.1.2. Evolution of Sustainable Education

Changes in society, an increased understanding of environmental issues, and significant changes in educational approaches influence the continuous process of developing sustainable education (Uralovich et al., 2023; Okada & Gray, 2023; Arhinful & Radmehr, 2023). This adventure exemplifies an ongoing and flexible process in which the educational terrain adjusts to and influences the evolving requirements of communities and the environment. Over time, sustainable education has emerged as a powerful and evolving impact, shaped by changing cultural values, growing awareness of environmental interconnectedness, and progressive shifts in our understanding and approach to education (Homer & Lim, 2024; Hernandez Gonzalez, 2023). The ongoing development of sustainable education demonstrates its durability and capacity to adjust, matching the changing needs of a constantly changing world.

2.1.3. Global Initiatives and Frameworks

Prominent global projects and frameworks, such as the Sustainable Development Goals (SDGs) (Leal Filho et al., 2023), significantly influence the integration of sustainability into education. These projects are collaborative worldwide endeavors aimed at tackling complex snags. The integration of sustainability into education is a deliberate solution to these urgent needs. The Sustainable Development Goals (SDGs) serve as a comprehensive framework that outlines a vision for sustainable development. This vision includes several aspects such as environmental preservation, social fairness, and economic advancement (Fallah Shayan et al., 2022; Imaz & Sheinbaum, 2017). The impact of these global endeavors goes beyond just words, deeply affecting educational policies, curriculum design, and institutional practices. The SDGs (4 and 17), specifically, act as a guiding principle, driving educational endeavors towards a unified and coordinated strategy, guaranteeing that the promotion of sustainability in education is in line with wider global goals for a fairer, more resilient, and more sustainable future (Khushik, F., & Diemer, 2020; Ametepey et al., 2023).

2.2. System Thinking in Education

System thinking in education refers to a transformative strategy that goes beyond traditional linear models of education (De Angelis & Ianulardo, 2024). The concept entails understanding educational systems as dynamic and interconnected entities, with a focus on the relationships and dependencies within the learning environment (Pischetola & Miranda, 2020). This notion encourages educators to examine obstacles in a holistic manner, cultivating a more thorough comprehension of intricate concerns within the educational domain (Grohs et al., 2020; Baena-Morales et al., 2023; Lowell & Yan, 2024). This inquiry examines the fundamental concepts of system thinking, its crucial role in tackling complex difficulties, and its practical incorporation into educational pedagogy.

2.2.1. Conceptualizing System Thinking

System thinking in education signifies a fundamental change in perspective from conventional linear thinking to a comprehensive and interconnected approach (Jackson, 2019). In education, systems thinking refers to the perception

of educational systems as dynamic and linked entities where different components interact and mutually impact one another (Shaked et al., 2017). This approach highlights the significance of comprehending the interconnections, reciprocal interactions, and interdependencies within the educational ecosystem. When educators utilize systems thinking, they take into account the larger context and acknowledge that modifications in one part of the system might cause repercussions throughout the entire educational setting (Arnold & Wade, 2015; Lowell & Yan, 2024).

2.2.2. Importance in Addressing Complex Challenges

The application of systems thinking is extremely valuable in solving the complex bumps that educators and institutions encounter. By embracing a systemic viewpoint, educators acquire a deeper understanding of the fundamental origins of convoluted issues instead of merely treating surface-level symptoms (Kuchinke, 2023; Kundu, 2020). This methodology improves problem-solving skills, allowing educators to create thorough solutions that consider the interconnectedness within the educational system (Tan, 2021; Henriksen et al., 2017). System thinking offers an organized and analytical approach to efficiently address difficulties related to student performance discrepancies, resource allocation dilemmas, and curriculum design complications (Massey et al., 2023; Nilimaa, 2023).

2.2.3. Integration into Educational Pedagogy

The gradual integration of systems thinking into educational pedagogy goes beyond theoretical ideas and has practical implications for teaching methods (Baron & Daniel-Allegro, 2020; Obeng, 2024). Teachers have the ability to integrate principles of systems thinking into the process of developing curriculum, designing classroom activities, and facilitating collaborative learning experiences (Lowell & Yan, 2024). This integration promotes the development of critical thinking skills as students acquire the ability to assess problems within a wider framework of systems. Interactive and participative learning settings foster students' exploration of the interconnections between elements, equipping them to address real-world situations (Demssie et al., 2023). As a result, it is critical to acknowledge the significant potential for change that arises from effectively incorporating system thinking into educational pedagogy.

2.3. Interdisciplinary Collaboration in Management Education

Interdisciplinary collaboration in management education entails integrating information and procedures from other disciplines to create a genuine synthesis of approaches (Kidron & Kali, 2024). This technique provides a more thorough comprehension of intricate matters within the realm of management education.

2.3.1. Significance in Sustainability Context

Sustainability greatly emphasizes the importance of interdisciplinary collaboration. Adopting a cooperative approach is crucial for not just achieving but exceeding worldwide sustainability objectives (Berrone et al., 2023; Hassan et al., 2024). Developing the essential skill sets in leaders who are leading environmental, social, and governance (ESG) projects guarantees that their individual contributions have the greatest possible influence (Krambia-Kapardis et al., 2023; Becchetti et al., 2022). For example, a business strategy course could incorporate knowledge from environmental science to gain a full understanding of how company actions affect the environment. This comprehensive strategy provides future managers with the necessary abilities to effectively combine economic success and social and environmental responsibility. It ensures that corporate activities are in line with sustainable ideals.

2.3.2. Case Studies of Successful Collaborations

There are several examples that demonstrate the success of interdisciplinary collaborations in management education. Imagine a university's business and environmental science departments working synergistically to develop a novel course or program that focuses on implementing sustainable business practices. Stanford University, located in California, USA (National Academies of Sciences, Engineering, and Medicine 2020), is a prime example of a university where robust business and environmental science departments collaborate to create a program that emphasizes sustainable business practices. The Sustainable Business Leadership Program (SBLP) at Stanford University is a joint effort between the Graduate School of Business and the School of Earth, Energy, and Environmental Sciences. The program's objective is to provide students with the required information, abilities, and mindset to effectively guide firms in adopting sustainable practices while also ensuring long-term profitability and environmental stewardship. The Sustainable Business Leadership Program at Stanford University equips aspiring leaders with the skills and knowledge to bring about positive transformations in organizations, communities, and the

global economy (Bömelburg & Gassmann, 2024). It promotes the dual goals of environmental stewardship and corporate prosperity.

An additional demonstrative example could involve a collaborative study effort between the management and sociology departments, focusing on the societal consequences of business policy. These case studies highlight the concrete advantages that arise from the combination of several academic fields, showcasing the potential for creativity and the development of influential educational programs.

2.3.3. Challenges and Opportunities

Although interdisciplinary collaboration provides numerous advantages, it also poses distinct problems. Obstacles such as administrative impediments, challenges in integrating multiple approaches, and pushback from professors accustomed to traditional disciplinary boundaries exist. Nevertheless, these challenges also represent prospects for innovation and enhancement. To overcome these obstacles, one must possess a receptive attitude, adaptability, and a resolute dedication to working together. The prospective benefits, such as ground-breaking research, enhanced teaching methods, and graduates well-prepared to tackle intricate problems, justify the necessity and enormous satisfaction of these endeavors in the field of management education (Singh, 2021).

3. Research Methods

3.1. Innovative Teaching Methods

Innovative teaching approaches are a collection of dynamic strategies and techniques used by educators to engage students and improve learning results (Al Haddar et al., 2023). These methods go beyond conventional approaches by adding active learning, real-world applications, and the integration of technology to provide knowledge in innovative and engaging ways.

3.1.1. Active Learning Approaches

Active learning is an instructional approach that actively engages students in the process of learning (Opre et al., 2024). Active learning seeks to cultivate critical thinking and problem-solving abilities through activities such as conversations, problem-solving, case studies, role plays, and group projects. The goal is to go beyond passively absorbing information and instead encourage students to actively interact with the topic. This technique enhances comprehension and fosters a more engaged and collaborative learning atmosphere.

3.1.2. Case-Based Learning

Case-based learning is a teaching method that involves using specific and detailed scenarios to facilitate the learning process (Kolodner et al., 2013; Koehler, 2023). Case-based learning in 2024 involves presenting students with real-world scenarios that require them to utilize their knowledge in order to solve problems or make judgments (Gonzalez-Argote & Castillo-González, 2024). Case-based learning is highly effective in developing and refining critical thinking skills, decision-making abilities, and the practical implementation of theoretical information (Lavi & Marti, 2023). By involving them in real-life situations, this strategy prepares students for the complexities they may face in their professional endeavors.

3.1.3. Experiential Learning and Simulations

Experiential learning is a method of education in which students gain knowledge by directly engaging in immersive activities (Asad et al., 2021). That is the process of acquiring knowledge through practical experience (Motta & Galina, 2023). Experiential learning can include internships, field visits, or laboratory work. Simulations, which are a type of experiential learning, involve placing students in virtual scenarios that closely resemble real-world conditions (Schott & Marshall, 2018). Both strategies offer opportunities for students to get practical experience and apply their academic knowledge. Students gain a more profound understanding of their area of study and nurture critical abilities through the experience of facing practical obstacles in a controlled environment.

3.1.4. Technology Integration

Technology integration refers to the deliberate use of technological instruments in the classroom to enhance teaching and learning experiences (Lowell & Yan, 2024). These include online learning platforms, digital simulations, virtual

reality, and other technology-driven tools. Effective utilization of technology can revolutionize the learning process by making it interactive, captivating, and tailored to individual needs (Kikalishvili, 2023; Lakshmi et al., 2023). It expands the limits of conventional classrooms, providing students access to a wide range of resources and learning possibilities. Technology integration in education not only adjusts to the digital era but also improves collaboration, innovation, and accessibility (Ertmer et al., 2012; Aripin & Paramarta, 2024).

These cutting-edge teaching methods surpass traditional pedagogies. They engage students in the learning process, present them with practical situations, offer immersive experiences, and utilize technology to create interactive and tailored learning environments. By adopting these approaches, educators create opportunities for pupils to not only acquire knowledge but also actively utilize it in the complex and diverse problems of the contemporary world.

4. Results and Discussion

4.1. Societal Sustainability and Management Education

Societal sustainability emphasizes the important connection between management education and society's overall welfare. This inquiry examines the precise meaning of societal sustainability, its various dimensions, and the crucial role that management education plays in developing leaders who prioritize making a beneficial influence on society. It emphasizes how these programs equip future leaders with the skills to navigate the complexities of a globally interconnected world, while also emphasizing ethical decision-making and social responsibility.

Societal sustainability is defined as a society's ability to meet its current needs without jeopardizing the ability of future generations to meet their own needs (Elsawy & Yousse, 2023; Mensah, 2019). It goes beyond conventional sustainability by including economic, social, and environmental aspects. This comprehensive strategy seeks to cultivate a fair and just society that appreciates and embraces variety, encourages social unity, guarantees financial well-being, creates job opportunities, and protects the environment (Huntjens, 2021).

4.1.2. Linking Management Education to Societal Impact

a. We cannot overstate the critical role that societal sustainability and management education play in shaping future leaders. It provides individuals with the requisite knowledge and competencies to formulate decisions that positively and sustainably influence both the environment and society (Dzhengiz & Niesten, 2020; Arhinful et al., 2024). This entails developing an awareness of the complex interdependencies that exist between society and business, placing a strong emphasis on the importance of ethical decision-making, and fostering a dedication to corporate social responsibility (Žižek et al., 2021; Mensah et al., 2024). Management education contributes to society's sustainability in the following ways:

b. Integrating sustainability into the curriculum entails incorporating sustainability-related theories and concepts into all academic disciplines. This ensures that future leaders are knowledgeable about the principles of sustainable business practices.

c. Management programs promote the adoption of sustainable practices by encouraging students to apply their knowledge of sustainability in both their personal and professional lives. This helps cultivate a culture of responsible decision-making.

d. Students may actively tackle sustainability issues by collaborating with local communities and organizations. This engagement offers practical experiences and cultivates a sense of accountability towards the wider community.

4.2. G-20's Role and Expectations

The G-20 is a major global platform that brings together governments and central bank governors from the 19 largest countries in the world, as well as the European Union (Kirton, 2016; Stahl G20; Hilbrich, 2024; Arhinful et al., 2024). The establishment of the organization aimed to foster worldwide economic expansion, facilitate international commerce, and oversee financial market regulations (Kirton, 2016). The G-20 has been expanding its sphere of influence to encompass other areas, such as education. The organization effectively tackles significant challenges concerning the worldwide economy, including maintaining international financial stability, mitigating climate change, and promoting sustainable development Hariram et al. (2023). The G-20 countries collectively account for almost 80% of the gross world product (GWP), 75% of global trade, and 60% of the world's population (Tripathi, 2023;

Arhinful & Radmehr, 2023). It is a powerful organization with a significant impact on the development of global policies.

4.2.1. G-20 Initiatives in Education Sustainability

The G-20 has initiated a number of forward-thinking initiatives aimed at promoting sustainability in education. These efforts have a specific focus on incorporating sustainable development goals into educational curricula, promoting research on sustainable practices, and facilitating the sharing of knowledge on the most effective sustainability practices across member nations.

4.2.2. Expectations for Management Faculty

In this scenario, management faculties within educational institutions play a crucial role. They are assigning them a leadership role, expecting them to set a good example by integrating sustainability ideas into their teaching methods and administrative procedures (Tessema et al., 2024; Obeng et al., 2024). This entails designing educational programs that tackle current sustainability issues, promoting multidisciplinary research centered on sustainable development, and establishing a campus environment that innately appreciates and incorporates sustainability concepts (Hogan & O'Flaherty, 2022; Wright et al., 2022; Obeng et al., 2024).

4.2.3. Aligning educational goals with global sustainability agendas

Ensuring that educational aims are in line with global sustainability agendas is a complex but essential task (Bengtsson et al., 2018; Nyarko et al., 2024). This process requires a re-evaluation of educational goals to ensure they are in line with achieving global sustainability targets (Nordén & Avery, 2021). This may entail a greater focus on equipping students with the necessary skills and knowledge to understand and tackle sustainability issues, promoting values that prioritize environmental stewardship, and preparing students to be responsible citizens who can contribute to a sustainable future.

The G-20 has a wide-ranging and complex role in promoting education sustainability, which involves multiple stakeholders (Kaul, 2018). Management faculties and educational institutions play a crucial role in guiding the path towards a more sustainable future. Aligning educational aims with global sustainability agendas is crucial to this collective effort.

5. Conclusion

Our investigation of sustainability in management education reveals its significant capacity for transformative change. Our research has revealed important insights that highlight the complex relationship between innovative teaching methods, interdisciplinary collaboration, and the overall objective of promoting societal sustainability.

This review emphasizes the importance of management faculties in their role as guardians of a vital duty: the development of ethical and accountable leaders. This entails intentionally focusing on cultivating ethical decision-making principles and valuing society's welfare, in addition to typical economic skills. By cultivating these attributes in future leaders, we create the conditions for a more mindful and enduring approach to managerial methods.

As we consider the future, it is crucial for research efforts to explore in greater depth the long-term consequences of different teaching methods and the combined effects of interdisciplinary collaborations. Understanding the long-term impact of these methods is critical for improving educational practices and ensuring their continued effectiveness in promoting sustainable leadership.

In practice, institutions must remain dedicated to improving teaching methods and fostering collaborative relationships. By actively involving stakeholders from all sectors, institutions can drive significant change and make a tangible contribution to societal sustainability. This requires a collaborative endeavor to incorporate sustainability concepts into the core of company culture, thus harmonizing institutional goals with wider social necessities.

In the end, it is the shared dedication of academia, industry, and civil society that drives us towards a future that is both sustainable and fair. By embracing the revolutionary capacity of sustainability in management education, we lay the groundwork for a fundamental change in leadership that is not only efficient in promoting corporate achievement but also naturally aligned with the needs of our planet and its inhabitants.

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