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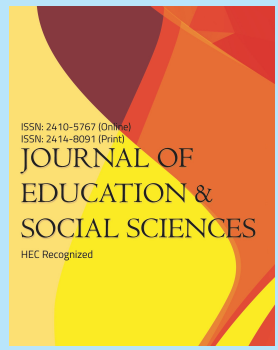

Transformative Educational Practices for a Sustainable Future: A Systematic Review

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Transformative Educational Practices for a Sustainable Future: A Systematic Review

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Abstract: *In contemporary scenario, the world is facing significant climate challenges that demand managers to possess awareness of the natural laws, exhibit transformative and collaborative thinking and become more proactive contributors of sustainability in the world. Hence, sustainability education is required more than ever before for a prosperous future. By synthesizing the existing body of knowledge using systematic review, this paper critically discusses the aspirations of educating for sustainable development. This study shows that despite the worldwide recognition of sustainability practices, its adoption and practice is not at par, as the workforce lacks the necessary skills that are required for implementing sustainable initiatives. This proposition suggests the role of higher education institutes that raise and foster such skills in potential future managers. Hence, this paper discusses reform in the existing system and programs of higher education institutes to enhance personnel awareness and to develop the required skills for taking sustainable initiatives. Moreover, this paper indicates value education mechanisms and the need for experiential, action focused learning to bring change at an individual level which will transform the way organizations deal with sustainability issues. The findings contribute to the literature by suggesting actions such as integrating themes from sustainable entrepreneurship into education for sustainability, training the stakeholders, establishing multi-level collaboration, and resolving gender issues in HEI's, which will deliver better results in these crises times.*

Keywords: Transformative education; managers; sustainable education; sustainable entrepreneurship.

Introduction

In 2015, the UN General Assembly embraced seventeen Sustainable Development Goals (SDGs) to be achieved by 2030. The objective of these goals was to create a prosperous and equitable life for the existing and coming generations. These goals were proposed as a response to deal with the grand challenge's world has been facing these days. In recent years, carbon emissions, natural resource consumption, waste discharges and environmental calamities have been amplified to a greater extent (Ikram, Zhou, Shah, & Liu, 2019; Khan & Ullah, 2019). Estimations shows that to support the existing resource consumption levels, energy use and waste generation, around 2.3 planet earth would be needed for survival (Bell, 2016). Further statistics shows that 80 percent of the products

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that humans consume is disposed of immediately after use. Moreover, 99 percent of total material flow for consumer goods goes to waste disposal within six months (Caldera, Desha, & Dawes, 2019). Statistics from Environmental Protection Agency (EPA) shows that electrical and electronic industry contributes to more than 50 million metric tons of electronic waste annually that is either discarded or become obsolete. This makes e-waste as one of the fastest growing waste category around the globe (Aboughaly & Gabbar, 2020; Pavithra, Rajan, Balaji, & Gopinath, 2020). Similarly, world estimates of plastic waste are disturbing. Statistics shows the generation of approximately 6300 Tg of plastic waste as of 2015 with China as the major producer of plastic having 23.9% share, Europe (20.4%), North America (20%) and the rest of Asia excluding China (15.8%) (Saleh & Danmaliki, 2020).

These statistics and facts led to the emergence of the concept of circular economy (CE) which has gained significant attention from researchers and policy makers globally in the 21st century. This is due to the positive contribution of the CE concept towards sustainable business models. Circular economy focuses on redesigning the processes and cycling of materials via reduce, reuse, and recycle principle. Hence, it becomes imperative for managers to encompass circular economy orientation to tackle the corporate sustainability issues (Goyal, Chauhan, & Mishra, 2021). However, to develop this CE Orientation, researchers consider the role of Higher Education Institutes (HEI) as they are responsible for the training of future managers. In the last few years, researchers have given considerable attention to the role of education in sustainability. It is advocated that HEI plays a key role in shaping the mentalities of next-generation professionals. Figures shows that the impact of HE stays with an individual even fifty to sixty years after graduation (Hueske & Guenther, 2021; Žalėnienė & Pereira, 2021).

Though considerable number of research has been done in the past on the HEI's sustainability issues and its impact on the corporate sustainability. Yet, the results lack clarity regarding the underlying reasons that are creating sustainability issues and the development of specific plans that can help in the implementation of sustainability in HEI's (El Bedawy, 2020; Mian, Salah, Ameen, Moiduddin, & Alkhalefah, 2020). Therefore, the aim of this systematic review is to identify and synthesize the information on the underlying reasons and challenges facing HEI's and suggesting appropriate actions that can help the embrace of sustainability in HEI's. This is important because when challenges would be identified, only then appropriate actions can be done to deal with the problems.

This study contributes to several ways. First, the research provides a comprehensive overview of the underlying reasons of sustainability issues within HEI's that can create hindrances in the implementation of sustainability. Second, it attempts to assists scholars by identifying the trends and emerging patterns of the field. This research tries to integrate the practical competency-based concept of sustainable driven entrepreneurship in the core course contents to develop future mangers with a transformative and collaborative thinking. This will enhance project-based learning that increases the potential to tackle future real-world challenges. Third, the research outlines the critical aspect of training the educators and staff through capacity building programs to bring changes in daily operations. Fourth, it highlights the key role of multistakeholder collaboration in the form of international academic conferences and working on joint projects with NGO'S

and business organizations to foster sustainability. Lastly, this paper highlight's the role of gender issues that can hinder the implementation of sustainability in HEI's which is an under researched area in the field.

Methodology

This paper employed systematic review approach based on the guidelines suggested by Torraco (2005). To conduct an internationally accepted method of analysis and classification, the study used PRISMA guidelines proposed by Hopman-Rock and Westhoff (2000) comprising of identification steps, screening and final selection of articles based on a specified criteria. In this process, selected keywords identified from the literature were used to have a comprehensive research spectrum. In addition, inclusion and exclusion criteria was set to narrow down the number of publications.

Inclusion criteria comprised of the papers published in the last five years which is the acceptable lifespan of a manuscript in social sciences. The time frame included papers published between 2017 and 2021. The selection criteria were articles only, peer-reviewed, in English language and must be published in SCI-Expanded, SSCI and ESCI. This study employed title search option for the specified keywords. This is due to two reasons, first, to restrict the number of articles from the wide number of publications on the subject matter. Secondly, other review papers were accessed to identify the set of comprehensive keywords so not to neglect any relevant term, hence, the broaden nature of these keywords proves to be sufficient for the title search. Moreover, as the focus of the paper was to explore the potential role of HEI in training of future managers to improve corporate sustainability performance, the papers that covered democracy, and online education themes were excluded from the analysis. Google scholar database was used due to accessibility issues for other databases; however, a double check procedure of snowball technique was also used where the references of selected articles was accessed to ensure coverage of all relevant papers. Table 1 presents the lists of keywords used in the search.

Table 1
Subject Search

Keywords Used	Education for sustainable entrepreneurship" OR "education for sustainability management" OR "education for sustainable business" OR "education for sustainability" OR "education for sustainable development" OR "sustainability education" OR "higher education"

Results

The database search yielded 464 papers based on the keywords search. After removing duplicates through Mendeley Software and centered on inclusion criteria, 33 papers were finally selected as they met the study scope and inclusion criteria. The last stage was reviewing all the 33 selected papers to extract the relevant themes. This qualitative analysis of synthesizing important aspects was performed using the guidelines explained by Cronin, Ryan, and Coughlan (2008) which led to the emergence of new interpretations.

Moreover, procedures elaborated including using their outline to identify what, how and why concepts within the literature are incorporated. This resulted in generating the summary of the main ideas and come out with the new understandings and explanations.

Thus, to carry out the content analysis, following themes were derived from reading the title and full text comprising of the sustainable entrepreneurship themes in curriculum design, pedagogical approaches, HEI's practices and routines for corporate sustainability and gender issues which led to suggest proposed actions plans for HEI's. The selected articles mainly identified curriculum related problems and importance of training for faculty and staff to better deal with the sustainability issues. In addition, few papers also highlighted the problems in the existing processes and practices of HEI's. The results showed the heightened importance given to the field during 2019 and steady trend of publications over the years. Finally, the analysis led to propose four measures and action plans that can be acted upon to embrace the implementation of sustainability in HE which might ultimately address the corporate sustainability problems.

Discussion

To meet the SDG's related to responsible consumption and production and sustainable cities and communities, a multifaceted approach and a combination of actions is essential. To address these goals, the existing literature mainly concentrates on reducing the organizational environmental and societal impact through regulations and coercive mechanisms. Further research highlights the role of inter-organizational learning and innovation to address sustainability challenges at an organizational level. However, recent research on corporate sustainable performance emphasizes the importance of developing sustainable entrepreneurship orientation in managers for bringing necessary changes required to tackle sustainability problems (Franco et al., 2019). This leads us to consider the role of HEI's that are responsible for the training of future managers (Rodríguez-Solera & Silva-Laya, 2017).

This implies that to bring changes in the existing managerial practices, changes are required at HEI level. This can be done at two points, first with respect to curriculum design and its learning outcomes while emphasizing on development of sustainable entrepreneurship competencies among the students. Secondly, with respect to capabilities and training of faculty, staff, and students (Faham, Rezvanfar, Mohammadi, & Nohooji, 2017; Lambrechts, Van Liedekerke, & Van Petegem, 2018). Though recent studies highlight the importance of action-focused, experiential curriculum-based learning instead of providing only awareness education, they fail to deliver sound results. This research proposes that in addition to bringing changes in the curriculum design based on sustainable entrepreneurship and introducing pedagogical approaches for institutional members (Caniglia et al., 2018), changes must be made in the HEI's internal practices and processes, infrastructure, and organizational culture (Žalėnienė & Pereira, 2021). Hence, in this section, we discuss specific action plans for policy makers in HEI's that can assist in minimizing the organizational social and environmental impact. Table 2 highlights the underlying reasons for sustainability issues and suggests specific actions plans to deal with the issues.

Table 2
Underlying Reasons and Action Plans

Reasons for sustainability issues	Proposed Actions
Inadequate Curriculum	Using Information and Communication Technologies (ICT) and clear learning outcomes. Employing Sustainable entrepreneurship based experiential learning approaches to encourage critical thinking. Engaging in service-learning projects with NGOís or other business organizations. Developing circular business Plans.
Relevant Skills, training, and experience problems of Faculty and Staff	Enhancing faculty, students, and staff awareness about sustainability challenges through multidisciplinary seminars, debates, and conferences. Providing training to institutional members about how to bring change in their daily operations. Promote usage of technologies such as mobile applications that give practical advises and plans.
Understanding and perceptions of HEI's stakeholders about Sustainability	
Lack of awareness about concept of sustainable university	Setting up Institutional Agenda by Introducing sustainability schemes and plans in education and research and encompassing flexible organizational structures.
Inadequate concern about sustainability problems	
Low control beliefs for bringing sustainable changes	Availability of statistics regarding global and local sustainability performance.
HEI Practices and Routines	
Improper waste management practices	Calculating amount of waste produced. Informing people about its consequences through Information campaigns highlighting sustainability as grand challenge. Focusing on reduction and recycling such as printing less papers, ban plastic/aluminum teacups and promote reusage of materials. Focusing on selective waste collection.
Improper water conservation mechanisms	Enhancing awareness about the sustainable use of water. Installing efficient technologies for rainwater storage and reuse.
Improper Energy conservation mechanisms	Enhancing awareness about energy challenges and importance of renewable energies. Taking measures to improve energy efficiency across all buildings. Planning to instill renewable energy options.
Lack of planning and control for sustainable campus operations	Focusing on green infrastructure such as green walls and buildings. Promoting sustainable transport system by promoting bicycles usage and public transportation.
Non availability of Funds	Finding new sources of Funding.
Lack of reporting and assessment mechanisms	Setting up the indicators in accordance with the standard sustainability criteria such as number of resources used in a year, annual energy costs, number of green contracts and number of sustainability linkages and partnerships.
Inter-Organizational Linkages	
Lack of Cooperation	Efforts to collaborate with other universities and institutions that are delivering better impact. Launching online platforms to build cordial relationships, sharing knowledge and best practices.
Gender Inequality Concerns	Exploring gender-based sustainability achievements to implement sustainability plans.

Key Action Plans to be Adopted by HEI's

Measure 1: Promoting Sustainability Driven Entrepreneurial Curriculum Reforms and Training Programs

Several past studies have examined the proficiencies of Sustainable entrepreneurs to propose action plans for study programs in higher education institutions. This highlights the critical nature of relevance of competencies, capabilities, beliefs, values, worldviews, and opportunities as highlighted in earlier studies (Hess & Maki, 2019; Holdsworth & Thomas, 2020). This suggests various measures that can be adopted. First, researchers propose that educational approaches should shift from being purely knowledge-oriented to developing relevant competencies and skills required for grand challenges. Recommended pedagogical approach is adaptive education emphasizing on action-based learning; collaborative learning; experiential focused learning; problem-based learning; interdisciplinary learning, transdisciplinary learning, and transformative learning (Gal & Gan, 2020). This requires that dealing with complex real world sustainability issues in a business setting in future, students must get exposure of the world beyond university premises. This can be achieved through engaging in service-learning projects with NGO's or other business organizations which will foster cooperative problem-based learning. Moreover, such projects should be made important criteria for scoring and assessments.

Secondly, subject curriculum must integrate political, social, and ecological themes and emphasize on broader questions such as the need for sustainable entrepreneurship ventures and specific steps of implementation to address these challenges (Caniglia et al., 2018; Hallinger & Chatpinyakoop, 2019). This can be achieved by letting students develop circular business plans which will help them understand the dynamics of sustainability driven entrepreneurship ventures. Third, focus should be made to build and expand personal development processes of students through creating systems where they learn how to identify and exploit green opportunities. Examples might include vision and mission development with peer coaching (Singer-Brodowski, Brock, Etzkorn, & Otte, 2019). These settings will let students learn how to capture the opportunities and might change their beliefs, objectives, or the feeling of self-efficacy (Felgendreher & Löfgren, 2018; Biberhofer, Lintner, Bernhardt, & Rieckmann, 2019).

Fourth, multi- and transdisciplinary educator (cross-teaching) should be employed for delivering sustainability programs. Fifth, training the trainer programs could be initiated where experienced and skilled professionals could teach faculty and staff about sustainability implementation in higher education (Gal & Gan, 2020). This might cover multidisciplinary seminars, debates, and conferences on innovative teaching methods (Nölting, Molitor, Reimann, Skroblin, & Dembski, 2020). In addition, institutional capacity building programs for both faculty and staff can be introduced to provide professional development for educating sustainability. Other examples can include Plan–Do–Check–Act tool for continuous improvement in teaching and education ecosystems. Moreover, control mechanisms including award and punishment systems should be made part of these trainings (Risopoulos-Pichler, Daghofer, & Steiner, 2020).

Measure 2: Promoting Sustainable Mechanisms within HEI

This starts with setting up an Institutional Agenda for sustainability. This covers the attitude, understanding and perceptions of key stakeholders that determines the extent to which sustainability goals can be achieved (Cotán, Aguirre, Morgado, & Melero, 2021). Stakeholder's realm for HEI's include Leaders, faculty, students, staff, and external stakeholders that can play a fundamental role in bringing changes required for sustainability. The literature shows that HEI's stakeholders are found to be familiar with the concept of sustainability, however, they have a limited understanding of the concept of sustainable universities. To bring this change, raising awareness and consciousness of multiple stakeholders (through training and calls) and disseminating potential sustainability information, aims, guidelines and actions can help to a greater extent at all levels (Eustachio et al., 2020). YouTube series such as 'Walking throughout Colombia towards sustainability' can also be executed. Moreover, visualized workshops on sustainable development to bring changes in consumption patterns, focusing on buying less, and reuse might contribute a great deal. Additionally, HEI's need to work with more flexible organizational structures and set up the comprehensive mission statements and strategies to achieve sustainable goals.

In addition to that, projects to protect natural resources such as rationalize water and energy use and proper waste disposal can be executed in HEI's. Examples include collecting and reprocessing rainwater and improving energy conservation and efficiency though embracing LED lights, solar energy generation, reminders to shut down lights and computers when not in use. In addition, green contracts, and reformation of existing buildings in accordance with sustainability standards can also help. Though this sounds difficult, but it can be initiated using simple steps such as planting trees, setting up food gardens and working with green suppliers (Farinha, Caeiro, & Azeiteiro, 2019). Promoting sustainable transport system by promoting bicycles usage and electric bikes can also be effective. Likewise, financial problems while implementing sustainability demand that HEI's find potential opportunities in the green economy, commit themselves to lifelong dedication to sustainable development in higher education and should identify new sources of funding. One way is to introduce sustainability schemes in education and research with continued investments and encompass green operations. This can also overcome challenges by attracting funds, reducing expenses, and meeting social challenges (Aleixo, Leal, & Azeiteiro, 2018).

Besides this, reporting mechanisms for sustainable development initiatives must be in place. This might include stating established criteria's such as number of resources used in a year, annual energy costs, number of green contracts and number of sustainability linkages and partnerships. This can be done through developing a sustainability report stating the costs associated with resources usage and sustainable steps taken to be evaluated by an independent body. In addition, best practices adopted by HEI's can be acknowledged through HEC certifications which assures that a particular HEI has implemented approved percentage of the actions specified in the sustainability plan. It is raising awareness and conveying information among all the educational community about the sustainable culture and using technologies in the mapping of processes. This

might communicate positive sensations among HEI's to promote sustainability culture (Budihardjo, Ramadan, Putri, Wahyuningrum, & Muhammad, 2021).

Measure 3: Promoting External Collaboration Approaches with Multiple Stakeholders

Berchin et al. (2018) advocated that international collaboration approaches on sustainable development can help address global sustainability challenges. Collaboration can take place at two levels, first, between different HEI's and second, among HEIs and multi-stakeholders'. Collaboration among HEI's can stimulate learning of best practices whereas working with multiple stakeholders has a potential to foster practical, action-focused learning for sustainability. One way of collaborating is through international academic conference approaches that can promote sustainability through sharing of knowledge, best practices, initiatives, techniques, and projects. Others include partnerships with institutions that are performing well with respect to sustainability. HEI's may engage in joint projects with universities having relevant expertise of green operations. In addition, HEI's may work on sustainable local development projects with municipalities to mitigate environmental and societal problems. Hence, networking is the key (Cebrián, 2018; Eustachio et al., 2020).

Measure 4: Focusing on Gender Issues

Existing studies highlight that most universities who are committed to sustainability does not put much emphasis on the promotion of women into leadership positions and this does not form the core of their sustainability agenda. This highlights the problem of gender inequality with under-representation of women in leadership positions in higher education. Though newer universities claim to be more committed to gender equality concerns, the results do not conform to the assertions. Scholars claim that there are still concerns on women as better sustainability leaders due to their strong commitment to ecological and societal issues and whether women inclusion in executive leadership roles affects level of sustainability at the corporation. This could be attributed to the still prevailing stereotype on women's abilities as leaders. However, gender-based sustainability achievements could be explored and worked upon as this has a potential to support the implementation of sustainability in HEIs (Eustachio et al., 2020).

Conclusion

This study presents a systematic literature review to identify advances in the role of HEI's to bring improvements in the sustainable corporate performance. As HEI's hold a leading role in the training of future managers and affects their beliefs, capabilities, values, and competencies through adaptive learning, synthesizing the literature on the underlying reasons for lack of implementation of sustainability is essential. For that assessment, thirty-three papers were selected for the analysis based on the scope of the study and inclusion criteria. Themes were generated and analysis was done according to the experts' guidelines to present the information in a meaningful way.

The analysis shows that the launch of SDG'S has resulted in enormous attention being given to sustainability in HEI's. However, several problems still prevail in the embrace of sustainability. First, the knowledge-based curriculum has been categorized as a popular way to teach sustainability. However, it failed to deliver desired results. Hence, developing sustainable entrepreneurship competencies based on experiential learning deemed crucial for the training of future managers relevant in real world corporate scenario. This is essential because society need managers possessing sustainable competencies such as new radical thinking for tackling grand challenges and adapting according to the situation which HEI'S fails to induce in students. Second, the knowledge, experience and skills of educators has been found to be particularly limited. This requires innovative methods of teaching. For that, capacity building training programs should be introduced to enhance understanding of sustainability. Third, HEI'S understandings of the topic, its internal processes and practices hinders the sustainability functions. This research proposes stakeholder's understanding and perception as the key to embrace sustainability. Fourth, the grand challenges demand institutional level cooperation to enhance direct contact of students and educators with society. Furthermore, this research proposes list of four measures derived from the selected articles to embrace sustainability in HE. Sustainability driven entrepreneurial curriculum and training of stakeholders, sustainable internal HEI mechanisms such as Proper waste disposal, energy, and water conservation, building intra-organizational networks and handling gender concerns in leadership positions seems to be the key strategies for implementation of sustainability in HEI. This might have a positive impact on all stakeholders, altering their attitudes towards sustainability and help in embracing sustainability initiatives within HEI's.

Limitations and Future Directions

Though several mechanisms are employed to make systematic reviews transparent and to improve its quality and robustness. Yet, there are still limitations on the quality of available information as it is derived only from journal articles and related researchers' assessments and recommendations. Future research work in terms of implementation of proposed measures can be done to check the effectiveness of proposed strategies. Moreover, the role of gender in sustainability achievements can be explored which has a potential to support the implementation of SDG's in HEI.

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