Integrating Sustainable Development Goals in the University Classroom

Jon Gorham

Abstract

University classrooms are increasingly challenged with societal needs beyond training, teaching, and research. This encompasses sustainability and practical integration of knowledge and insights to solve contemporary global problems. Multiple universities are considering integrating Sustainable Development Goals（SDGs）lesson plans in their classrooms. This essay examines the importance of incorporating SDGs lesson plans in the university classrooms, and more specifically, concentrates on how such classes empower students and other stakeholders to prioritize the planet's health and sustainability. The essay affirms that teaching SDGs strives to develop critical and ethical leaders of tomorrow's society, foster change management towards sustainability, empower a sustainable development mindset by integrating new viewpoints into classrooms, and developing students' and lecturers' competencies. The paper concludes that it is imperative to continue advocating for Education for Sustainable Development（ESD）in university classrooms to attain a more resilient and sustainable society.

Key Words

higher education, sustainable development goals, SDG, 21st century skills, sustainability

Contents

Introduction

Contemporary society is experiencing complex challenges concerning sustainable development. The 2030 Agenda for Sustainable Development, consented by all United Nations（UN）members in 2015, offers a pathway for peace and prosperity of all populations and the planet, presently and in the long-term future. It outlines 17 Sustainable Development Goals（SDGs）that appeal to nations to follow sustainable development through partnerships. Elaborating on the Millennium Development Goals, these objectives seek to incorporate and address the three viewpoints of sustainable development: economic,

social, and environmental components (United Nations, 2015).

According to Albareda-Tiana et al. (2018), the onset of the 21st century has experienced significant alterations to make the planet a less sustainable, less peaceful, and vulnerable place. Considering these social and environmental risks facing the planet, the idea of sustainable development is essentially relevant today in our classrooms (Chaleta et al., 2021). Higher education institutions (HEIs) or other technical learning facilities (which encompass universities dealing with applied sciences) can implement significant changes to sustainability if they designed their teaching, training, research, and daily activities to be sustainable (Nölting et al., 2020).

Chaleta et al., (2021) explained that universities should strive to make the most out of the SDGs in their teaching and research functions and other university extension services. For instance, SDG 4 (Quality Education), which concerns higher education, is a significant aspect due to its function in educational policy and implementation at all teaching and research categories. While the SDGs are not binding, governments need to be held accountable for their execution and develop national targets and actions for monitoring and evaluation (Eurostat, 2020). According to the Sustainable Development Solutions Network (SDSN) Assembly (2017), education is a pivotal societal institution that offers a strategic path to establishing resilient and sustainable societies. In this regard, universities and other learning institutions are challenged to integrate SDGs in their training activities, contribute and improve insights addressing societal, economic, and environmental issues. Thus, universities occupy a significant role within contemporary society to create and disseminate knowledge to foster local, national, and global social, economic, and human welfare. As Howlett et al. (2016) affirm, the current and the future state of the planet's health solely depends on the graduates from universities and colleges. This paper discusses the significance of teaching sustainable development goals in university classrooms.

1. Promoting Critical Thinkers in Moral Leaders of the Future

According to Levi and Rothstein (2018), students must be knowledgeable about local, regional, and international settings in which they reside and make decisions. A university course can only be the start in making these crucial decisions. A critical leader can carefully apply, assess, and judge a situation effectively. As Taimur and Sattar (2020) affirm, critical thinking is essential in this era of information technology, where students will need to assess and analyze it for decision making. Also, an ethical leader can infer a set of principles to inform the moral or right way of behaving. Therefore, to attain the SDGs, the universities need to train trustworthy, ethical, and critical thinkers who oversee policies fairly and consider adopting realistic targets for a sustainable planet.

Howlett et al. (2016) assessed instructors' Experiences teaching sustainable development courses to first-year learners within the Griffith School of Environment in Australia. The unit called, "Sustainable Development", is structured to enable students to understand the concept of sustainability in all its forms and complexities. Specifically, it was structured to develop students' creative and critical thinking abilities, collaboration capacity, and problem-solving skills. According to the tutors, a key goal of education through SDG integration was to develop a more critical, innovative, and reflexive approach to thinking about global issues and addressing them professionally. According to the study's conclusion, if universities are to solve global social, economic, and environmental issues, instead of being a hindrance,

they require to accept SDGs pedagogies in classrooms that induce students to become critical and re-flective thinkers towards attaining a sustainable world.

According to Weber et al. (2021), SDGs education in university classrooms fosters students' ap-proaches to addressing sustainability issues that involve problem-solving aspects such as complexity, ambiguity, and multifaceted form of the issue. A classroom that trains students to address multifaceted, critical, ethical, and systems thinking issues is a clear path in sustainability education. According to Willats et al. (2018), teaching SDGs fosters critical engagement levels of the students to shift their per-spectives and change their techniques of addressing sustainability issues.

Willats et al. (2018) carried out a study to examine adopting the SDGs into the primary curriculum at Nottingham Trent University to develop decision-makers of tomorrow. The study defined education for sustainable development (ESD) as "an aspect of fostering students to constructively and creatively tackle contemporary and lasting global issues and create a more sustainable and resilient community" (Willats et al., 2018, p. 65). Universities can promote global goals through education, operations, and re-search. University students will be leaders within all spectrums of society, encompassing both the public, private, and independent sectors. If these students advance global citizenship, as well as critical and creative thinking values from the university classrooms into their professional lives, sustainability is attainable. Moreover, Willats et al. (2018) affirm that universities often act as role models in the disci-plines such as sustainability, which other global institutions can follow. Thus, an assertive approach to ESD within university classrooms could be the path to the solutions to multiple global sustainability issues in contemporary society, such as addressing climate change, poverty eradication, and social in-equalities.

Weber et al. (2021) describe how teaching SDGs in a network science classroom can address complex sustainability problems. Network science reinforces the sophisticated, relevant system viewpoint priori-tized in ESD education. Weber et al. (2021) provide an educational framework integrated into network science to creatively and critically analyze a problem sustainability issue for a solution. As represented in Figure 1 below, the steps follow cyclical steps to creatively and ethically solve a problem. In the first stage, a sustainable problem is introduced into the class. For instance, the class can discuss basic concepts of SDGs before examining problems attached to these SDGs. After establishing a problem, the students assess it through network science concepts：edges and nodes. Students can initiate a discus-sion concerning the implications of the SDGs issue and establish their relationships. In the next stage, the network metrics can examine the sustainability of socio-ecological systems, the trade-off impacts between the goals, and carry out simulations in the network. Finally, the students can initiate a com-parison with their understanding from the established model and knowledge from the literature.

To address the prevailing sustainability concern, the students can reflect on their teaching system, knowledge obtained, and network science. Establishing the connections between viewpoints of sustain-ability enables a system to quantify their relationships. Thus, network science fosters creative and ethical thinking to examine multiple prevailing and future sustainability issues (Weber et al., 2021).

2.　Fostering Change Management Towards Sustainability

According to Hoover and Harder (2015), the way people approach and discuss stories concerning the
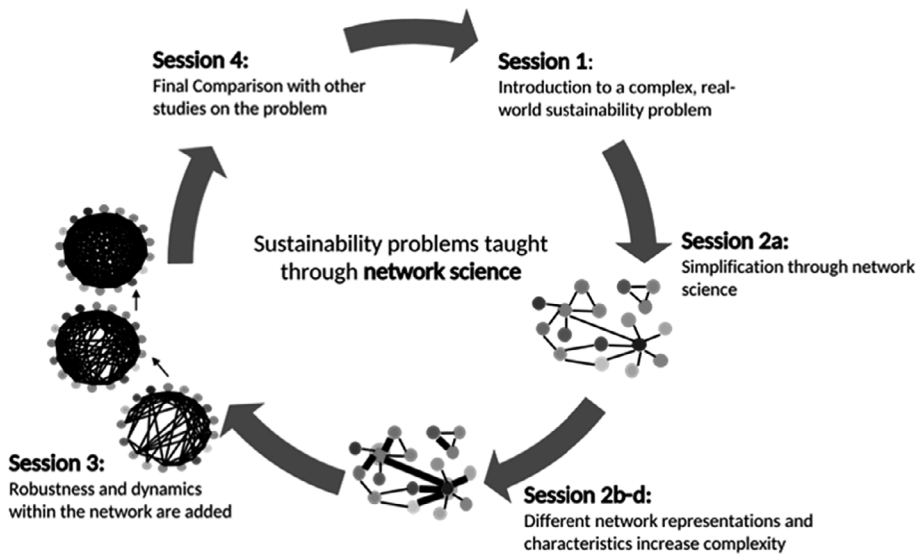
Figure 1：Solving a sustainability problem with network science（Weber et al., 2021）

institution and its place within it inform their perception to act or implement action about sustainability programs. Within universities, there is an appreciation that organizational 'chronicles' are the foundation for developing organizational cultures. Suppose we regard the cycle of change for sustainability as a social process or a cultural change movement. In that case, it is imperative to consider these accounts more keenly and be reflective, as a discipline, concerning the ability of stories to foster sustainability change. It would foster transparency concerning distinctive and probable conflicting discourses of sustainability that can be implemented in change processes. Thus, Hoover and Harder (2015) affirm that students should be motivated to reflect their individual opinions within the classrooms during sustainability lessons through practical discussions to present sustainability initiatives.

According to Yáñez et al. (2019), change to sustainability is often informed by features of organizational change. Verhulst and Lambrechts (2014) state that insight from organizational change and change management can be carried out in the contexts of environmental and social aspects, which inform the notion of change. For instance, using concepts of systems thinking and learning dynamics for systematic change can be implemented to foster sustainability issues. In most cases, the adoption of an innovation, such as sustainable development in universities, is problematic when the adopter of an organization is a person, specifically for abstract ideas. Nevertheless, when innovation is diffused throughout a learning institution, for instance, from university activities to classwork and then to research and university extension activities, and if it is integrated and practiced frequently until widespread implementation is observable, then it stops being an innovation. It then becomes a sustainability action and automatically becomes a basis of the organization's culture (Lozano et al., 2013).

Yáñez et al. (2019), use the 8-step change model for leading change management concerning sustainability education at universities since it has also been influential in the corporate world (Kotter, 2015). Yáñez et al. (2019), affirm the significance of ESD in creating a sense of urgency or a need to make a

change. In most cases, Verhulst and Lambrechts（2014）affirm a problem during implementation is overcoming resistance since, in instances of change, significant forces are pushing from the opposite side. Change mindset to sustainability is a risky process that necessitates the reinforcement of multiple individuals within an educational institution who must understand the aspect of sustainability and the urgency to accomplish it（Barth, 2013）.

In the second step, Yáñez et al.（2019）suggest ESD significantly creates leading coalitions. In most cases, it is essential to have change agents who can spread the word concerning the need for change and its implementation. The early adopters, often from classes teaching sustainability, are pivotal to empowering and guiding others to enhance sustainability actions, both in the classrooms and society （Barth, 2013）. These early adopters can belong to any position within the university since it only necessitates transformational and robust leadership.

In the third and fourth stages, Yáñez et al.（2019）affirm that ESD serves to create the vision for change and convey this vision. Sustainability classes are essential to foster students' listening, communication, vision creation, and consistent strategic adaptation to make the world safer and sustainable （Hoover & Harder, 2015）. In the fifth stage, sustainability lessons can enable students to overcome prevailing barriers. It is pivotal to establish organizational problems that link with SDGs and proactively strive to prevent them. In the sixth stage, teaching sustainability fosters a mindset of "quick wins" In the university and society. Change management activities often happen over more extended periods, which often induces rigid incentives. Nevertheless, students（change agents）are usually empowered primarily by the positive impacts of the sustainability change（Yáñez et al., 2019）.

In the seventh and the eighth stages, ESD can foster building on the change and affixing the changing culture in the university and the immediate society. The teaching of sustainability lessons in the university's classrooms serves as continuous improvement stages. Therefore, attaining a sustainable planet requires institutionalizing the sustainability concept, starting from the university classrooms to the society（Yáñez et al., 2019）.

3. Creating a Sustainable Human Development Concept

Sustainable human development（SHD）Is the concept that affirms humans must live and satisfy their demands without necessarily compromising the capacity of future generations to address their needs. According to Plewes et al.（1996）, SHD is a framework for developing guidance and informing global human capacity to attain a decent quality of life for the present and future generations. SDGs are primarily hinged on five pillars：people, prosperity, unity, collaboration, and the planet. Therefore, the SDGs agenda advances concepts like sustainability at the core of the discussion, including themes such as sustainable environments in the view of human development.

As per Beaglehole（2015）, SHD Plays a crucial role in securing human and planetary health. Thus, it is impossible to discuss sustainable development since sustainability is an inherent component of human development. Development integrated with ethical values provides the rest of the planet with a riveting vision for human development that prioritizes the planetary health objective. This objective is pivotal to safeguarding vulnerable civilizations. As Boni et al.（2016）assert, university classrooms can influence SHD through teaching and learning, active participation, research, and effective governance.

Boni et al. (2016) affirm that the basis of objective, sustainable development relies on the founding conversation about human development. Attaining sustainability implies the integration of other broad values like diversity, empowerment, and autonomy. These values are interconnected and inform the definition of a human and ESD. Boni et al. (2016) as well as Alkire and Deneulin (2009) assert that teaching SDGs in university classrooms fosters four interlocking features: equity, efficiency, collaboration and motivation, and sustainability, although these features are not exhaustive. Equity features arise from the aspect of justice, equitability, and integrity and integrate a prioritization for distributive justice in society. Considering human development, a student can prioritize equity in the space of others' freedom to lead better lives. Sustainability pedagogy fosters the concept of equity to help students and professors draw attention to individuals and society with unequal life opportunities due to sustainability challenges and may necessitate affirmative efforts.

Moreover, teaching SDGs in university classrooms fosters the efficiency feature. Students and universities can effectively utilize existing resources by integrating ESD in their learning and teaching environment. Also, as Boni et al. (2016) assert, when utilizing efficiency features, students must regard it with a progressive viewpoint since what can be efficient today cannot necessarily be efficient in the future. Thirdly, teaching SDGs fosters collaboration and empowerment features such as prioritizing sustainability progress that should involve people serving as agents both individually and as a team. According to Alkire and Deneulin (2009), liberty to make decisions significantly impacts our lives, holding individuals accountable for their pledges and the liberty to impact development in the immediate communities. In the university institution, this feature suggests that students should not be observers or beneficiaries but should act as agents ready to pursue and implement sustainability goals they value and have a motive to value.

Moreover, teaching SDGs in university classrooms fosters the sustainability feature. Human development is essential in all spectrums: social, political, and financial fields. Classroom teaching enables prioritization of environmental sustainability to attain developmental outcomes without exploiting our planet's natural resources and biodiversity and future generations. Students can attain financial sustainability to finance or budget for projects without penalizing future generations or jeopardizing the overall economic stability. Also, teaching SDGs enables students to subscribe to these social sustainability concepts by supporting and working with social groups and other societal organizations to reinforce development projects over time while assuming disruptive or unsustainable elements (Alkire & Deneulin, 2009). According to Zamora-Polo et al. (2019), education for sustainable human development (ESHD) aims to foster processes that fit SHD in all fields of contemporary society, involving both the formal and informal education arenas.

According to Boni et al. (2016), sustainability concentrates on lasting ideology, holistic knowledge, and interdisciplinarity issues. Diversity, equity, and coordination are core values in sustainability programs and should be considered by the university. Thus, human development serves as the transversal agent through teaching and research in the university. Thus, human development provides a framework for university standards considering contextual and global sustainable actions.

4. SDGs Education Give Lesson Plans New Viewpoints and Develop Students' Competences

Since SDGs are so wide-reaching, universities can employ them to offer new viewpoints and real-world situations to lesson plans. For instance, science and geography lesson plans can be improved by integrating climate change issues like reasons and impacts of the rising in average global temperature, or how life below water issues is causing the extinction of rare water species and pollution of water sources. Also, biology lessons could enable students to understand the structure, working mechanisms, and treatment alternatives of viruses and infectious diseases like malaria (Hindin, 2019). Moreover, it would enable students to understand societal features that allow these diseases and viruses to be prevalent and provide solutions for their eradication. Besides enriching the lesson plans, SDGs fosters classroom engagement by integrating the real-world issues and their impacts on the subjects learned in class (Hindin, 2019).

According to Zamora-Polo et al. (2019), By prioritizing teaching based on SDGs, university students enhance their competencies in their training. Competence refers to incorporating knowledge, capabilities, and behaviors that can be adopted in a particular context. University education often prioritizes its learners' professional training concerning specific competencies or training its learners in an integrated approach by fostering specific competencies and capabilities. Regardless of its implementation in the professional discipline, intersecting capabilities are associated with the application of active, creative, and devoted citizenship. The attainment of the SDGs targets and goals necessitates the training of learners in both particular and intersecting capabilities (Zamora-Polo et al., 2019). For instance, engineering, business, and science students must acknowledge the basics of renewable energies (specific competencies) and be knowledgeable about the effect of energy consumption on the immediate environments (intersecting competencies).

A classroom trains the experts and citizens of the community. It is why the basis of integrating SDGs into university teaching will play a crucial role in tomorrow's society. The task to tackle the SDGs must include the unified efforts of multiple fields and negotiations between distinctive parts of a similar discipline.

5. SDGs Teach Empathy to Students

According to Hindin (2019), the primary benefit of teaching SDGs in university classrooms is that it widens the students' perspectives concerning various communities and experiences. Consequently, it breeds empathy in the university classrooms and society. As per Owoimaha-Church (2017), empathy significantly plays two vital functions：affective and cognitive. Curiosity and empathy are the core of global leadership, and they develop students' awareness of the world. It enables the students to develop into well-rounded graduates and compels them to make informed decisions for the future. Affective empathy allows students to fit in other individuals' shoes. It can be presented as a mirrored emotion, for example, feeling happy when a close colleague feels happy and excited. On the other hand, cognitive empathy encompasses a student's ability to fully comprehend and pinpoint how someone else feels and perhaps assume the same feeling (Owoimaha-Church, 2017).

According to Owoimaha-Church (2017), empathy is not an abstract, visionary concept, nor can it be

understood in one lesson plan or semester. Instead, empathy can be taught as a foundational literacy skills class. Empathy develops the foundation for positive and collaborative classrooms that shape the students' minds and behaviors. Consequently, such students are likely to be the lead agents who can implement actions to attain the SDGs in tomorrow's society (Owoimaha-Church, 2017).

6. Building Institutional Capacity

Developing sustainable and resilient societies necessitate a profound change in behaviors, values, and action. SDG 16 Prioritizes the role of effective, transparent, and inclusive institutions to attain the SDGs. Thus, the attainment of the 2030 agenda essentially relies on effective, transparent, collaborative, and inclusive organizations that advance policy and offer services that address challenging issues like poverty and climate change (Cortese & Hattan, 2010).

In most cases, multiple change programs fail due to insufficient institutional learning skills and minimal prioritization to limiting processes within the organization. Cortese and Hattan (2010) Present the three most significant capacities to implementing a feasible initiative in education concerning the SDGs. First, education about the SDGs must involve the support of senior leadership in the university. In most cases, individuals in executive leadership positions are knowledgeable about the significance of sustainability. Therefore, it enables them to reinforce sustainability efforts through learning materials, establishing new, relevant structures, and implementing value statements for sustainability (Cortese and Hattan, 2010).

Moreover, ESD supports the collaboration of all stakeholders. According to Cortese and Hattan (2010), all stakeholders, such as students, faculty staff, lecturers, and support staff, are equipped with the knowledge, capabilities, and powers to assume actions that foster the university's sustainability target. Furthermore, ESD enables the establishment of progress assessments to track the sustainability process. As per Cortese and Hattan (2010), education enables the setting up of processes to monitor and track sustainability progress consistently, with mechanisms to report and restructure the approach over time. Therefore, students and the university can measure sustainability targets they value and manage what they can measure.

7. Fostering Alliances

One approach to the attainment of the SDGs is that it necessitates the participation and alliances of all actors in a multifaceted work. It is essential for all stakeholders, such as senior university leadership and the students, to work together. According to Zamora-Polo and Sánchez-Martín (2019), establishing alliances is pivotal for creating SDG targets at learning institutions. Alliances between higher-learning institutions are crucial, and the collaboration and unified work between these institutions and other relevant stakeholders. Thus, the concept of advancing sustainability in university classrooms is pivotal in creating a network of teachers and experts and the alliance between experts in the universities and non-governmental institutions. The SDGs support the connection and alliances of teachers around the globe, specifically through SDG-associated projects, seminars, and campaigns such as the #TeachSDGs movement (Zamora-Polo & Sánchez-Martín, 2019).

The alliances that are established from university classrooms can be pivotal in creating a practical

framework with communities and other stakeholders to tackle controversial and multifaceted local, regional, and global sustainability concerns. Sharing knowledge about SDGs between the teachers, students, and the community can strengthen the relationship with the policymakers to initiate dialogues on how to tackle sustainability issues. With the expansion of university participation, SDGs training and learning can significantly contribute to societal development（Chankseliani & McCowan, 2021）.

Conclusion

University classrooms hold a special place within contemporary society, specifically in creating and spreading knowledge. Moreover, universities are considered drivers of global, regional, national, and local innovation and social, economic, and political aspects. Universities also promote SDG attainment due to their ability to create and disseminate knowledge while implementing probable solutions and techniques to solve socio-environmental concerns. Therefore, the integration of ESD in university classrooms fosters the development of competencies about sustainability among students and teachers, including critical and creative thinking, institutional capacity, alliances, and system thinking. It is imperative to continue advocating for ESD in university classrooms to attain a more resilient and sustainable society.

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