
**Purpose:**

Approaches to solving sustainability problems require a specific problem-solving mode, encompassing the complexity, fuzziness and interdisciplinary nature of the problem. This paper aims to promote a complex systems’ view of addressing sustainability problems, in particular through the tool of network science, and provides an outline of an interdisciplinary training workshop.

**Design/methodology/approach:**

The topic of the workshop is the analysis of the Sustainable Development Goals (SDGs) as a political action plan. The authors are interested in the synergies and trade-offs between the goals, which are investigated through the structure of the underlying network. The authors use a teaching approach aligned with sustainable education and transformative learning.

**Findings:**

Methodologies from network science are experienced as valuable tools to familiarise students with complexity and to handle the proposed case study.

**Originality/value:**

To the best of the authors’ knowledge, this is the first work which uses network terminology and approaches to teach sustainability problems. This work highlights the potential of network science in sustainability education and contributes to accessible material.

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In this work we analyzed the mapping of Sustainable Development Goals in the curricular units of the undergraduate courses of the School of Social Sciences at the University of Évora. Of a total of 449 curricular units, only 374 had students enrolled in 2020/2021. The data presented refer to the 187 course units that had Sustainable Development Goals in addition to SDG4 (Quality Education) assigned to all the course units. Considering the set of curricular units, the results showed that the most mentioned objectives were those related to Gender Equality (SDG 5), Reduced Inequalities (SDG 10), Decent Work and Economic Growth (SDG 8) and Peace, Justice and Strong Institutions (SDG 16). Regarding the differences between the departments, which are also distinct scientific areas, we have observed that the Departments of Economics and Management had more objectives related to labor and economic growth, while the other departments mentioned more objectives related to inequalities, gender or other.

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The 2030 Sustainable Development Agenda sets out 17 Sustainable Development Goals (SDGs) aimed at improving life in all its dimensions, covering all sectors, with a particular emphasis on education. The study presented here focuses on universities as priority organisations and agents of change within the sphere of their social commitment. We thus conducted an analysis of the related scientific production as well as a bibliometric mapping, identifying the main publications indexed in the Web of Science, within its main collection. Focusing on scientific production, we examine the types of documents published, the evolution of the number of publications, the countries of origin of the publications, the most cited sources and articles, together with the most productive authors and a co-citation analysis. Regarding the bibliometric mapping analysis, the five core clusters included in
the study were: SDGs in general; SDG 4 on Quality Education; Education for Sustainable Development; Higher Education; and Education Management. Among the main conclusions reached, we would emphasise the need for a change in role and function of university education to tackle sustainable development.


The mining industry in the world has undergone a major metamorphosis in recent years. These changes have forced higher education to modify the curricula in a thorough way to meet the mining entrepreneurs' needs. The paper's scope is to answer the research question—how to attract students and implement Sustainable Development Goals (SDGs) in higher education in mining engineering? Based on the case of international cooperation carried out at the Faculty of Geoengineering, Mining and Geology of the Wrocław University of Science and Technology (WUST) within the framework of educational projects co-financed by European Institute of Innovation and Technology (EIT) and EIT Knowledge and Innovation Communities Raw Materials (EIT RM), the authors prove that the idea of sustainable development can be introduced into the system of teaching mining specialists at every level of their higher education (engineering and master's studies), through developing their new competencies, introducing new subjects taking into account innovative solutions and technologies, or placing great emphasis on environmental and social aspects. Examples of new curricula show a good way to change into the new face of a mining engineer.


This research demonstrates a novel method to communicate in Higher Education and raise awareness of the 2030 Agenda for Sustainable Development and particularly of Sustainable Development Goals, a vital step in accelerating action for their fulfillment. Students of the Faculty of Engineering during the “Ecology” course participated in groups in ten Ecological Projects covering a wide range of fields. These creative and experimental Ecological Projects focused on Sustainable Development Goals 3, 4, 6, 7, 12, 13, 14, 15 were inspired by Environmental science and Ecology. Their presentation occurred as event for the World Environment Day and the European Sustainable Development Week in the central square of the capital city of a region, which is a lignite mining region and the country’s energy heart. The Ecological Projects’ overall impacts were investigated through questionnaires completed by the participating students. Various statistical techniques were conducted. Nineteen questions establish as a measurement tool in its final form the questionnaire, whose Cronbach's alpha is 0.895 indicating that an excellent reliability was estimated. The central tendency of the responses in Questions such as Q2, Q3, Q4, Q5, Q6, Q8, Q10, Q14, Q15, Q16, Q17, Q18, Q19 indicates that Ecological Projects had enough impact on students’ cognitive, social and moral level. The Ecological Projects’ implementation and presentation sufficiently raised awareness of the Sustainable Development Goals. In three questions were detected statistically significant differences between the genders. Finally, according to the questionnaire responses, pairs of questions with moderate or strong monotonic association between them are presented too.


Universities have a critical role in achieving the Sustainable Development Goals (SDGs), both for implementing active policies and for encouraging other actors to participate. This requires having the skills and mind-sets to contribute to these challenges. The relevance and the commitment of universities to sustainability has led to the inclusion of SDGs in the strategies and agendas of these institutions. This requires the involvement of all the actors and some structural and cultural changes that put SDGs at the core of the governance and management of the university, embracing all the stakeholders. Various internal and external factors may influence the impact and success of the policies and activities aiming at achieving the SDGs, both from an overall perspective and for individual SDGs. This paper assesses the influence of some internal factors, such as the presence of universities on the internet, the level of internationalization or the availability of financial resources. Through both regression analyses and the Gephi method, our results confirm the importance of the presence on the internet, the
Education is of key importance to achieve the Sustainable Development Goals (SGDs), particularly now that the COVID-19 pandemic threatens the progress made toward a more inclusive, peaceful, fair, and prosperous society. In this research study, students of the bachelor's degree in Pedagogy receive a specialized training that addresses the SDGs through Information and Communication Technologies (ICT) referring to computers and digital technologies. In particular, the training addresses the SDGs through Educational Robotics (ER). The aim of the training course is twofold: first, to reinforce the students' Teacher Digital Competence (TDC), defined as teachers' ICT competence and didactic and methodological skills; and second, to train them in the integration of SDGs in ER educational projects. This paper presents a case study in which qualitative and quantitative methods are implemented. The objectives of the study are to investigate the students' level of TDC and examine their ability to integrate SDGs in ER projects. The research instruments employed are the COMDID-A questionnaire, a lesson plan template, and a lesson plan evaluation rubric. Among the most prominent findings, it is shown that the implementation of the SDGs through ER projects is still at an early stage, with a lack of systematic and replicable approaches in other institutions. This study makes a contribution towards the understanding of the complexity of the changes in Higher Education and the ways to approach it.


Since the United Nations (UN) approved the Agenda 2030 for Sustainable Development in 2015, higher education institutions have increasingly demonstrated their commitment by supporting several initiatives. Although a great deal of progress has been made, there is still a lack of integrative approaches to truly implement Sustainable Development Goals (SDGs) in higher education. This paper presents a practical case that illustrates how to design and articulate SDGs within an institutional setting adopting a holistic approach: EHUagenda 2030 plan of the University of the Basque Country (UPV/EHU). It is based on empirical inquiry into global and holistic sustainable transformation and a real experience to move towards a verifiable and pragmatic contribution to sustainability. This plan describes the contribution to 12 of the 17 SDGs, along with three sectorial plans (Equality Campus, Inclusion Campus and Planet Campus), as well as the refocus of the UPV/EHU's Educational Model and the panel of sustainable development indicators, which addresses the technical aspects of monitoring the SDGs. The methodology (mapping; mainstreaming; diagnosis and definition and, finally, estimation) is systematic and replicable in other universities yet to embark upon this integration. This case study makes a contribution towards the understanding of the complexity of the changes in Higher Education and the ways to approach it.


The Sustainable Development Goals (SDGs) have become entrenched in higher education institutions (HEIs) for their commitment to training people with relevant key competencies to address them. The article examines how teaching has been configured as the dimension with the greatest potential to incorporate sustainable development and how, together with research, it is considered one of the main areas of contribution to the achievement of the SDGs, concretized in the integration of these objectives to the study plans of the official degrees that, as a training action, are carried out. From the review of the report of the Second World Survey of the International Association of Universities on Higher Education, Research and Sustainable Development, the annual Report of the Agreement on the SDGs of the Global Alliance and the Dossier of the Spanish Network for Development Sustainable, each SDG analyzes the relevant actions of integration of these Global Objectives in the teaching function and references to experiences as case studies. The analysis of the results shows a high variability between the universities regarding the degree of approach of each of the SDGs and the tendency to identify as "well-established work", the one carried out with SDG 4, as a priority from teaching. The case studies analyzed show a significant differentiation regarding the types of actions they carry out and their trends. The use of surveys such as those analyzed are insufficient to observe the development of integration in the curricula, more experiences such as that developed by REDS are needed, as well as online platforms in which teachers present their experiences of curricular redesigns and incorporation from the SDGs to the curricula and mapping of the new degrees that are emerging.


The International Association of Universities on Higher Education, Research and Sustainable Development, the UN approved the Agenda 2030 for Sustainable Development in 2015, higher education institutions have increasingly demonstrated their commitment by supporting several initiatives. Although a great deal of progress has been made, there is still a lack of integrative approaches to truly implement Sustainable Development Goals (SDGs) in higher education. This paper presents a practical case that illustrates how to design and articulate SDGs within an institutional setting adopting a holistic approach: EHUagenda 2030 plan of the University of the Basque Country (UPV/EHU). It is based on empirical inquiry into global and holistic sustainable transformation and a real experience to move towards a verifiable and pragmatic contribution to sustainability. This plan describes the contribution to 12 of the 17 SDGs, along with three sectorial plans (Equality Campus, Inclusion Campus and Planet Campus), as well as the refocus of the UPV/EHU’s Educational Model and the panel of sustainable development indicators, which addresses the technical aspects of monitoring the SDGs. The methodology (mapping; mainstreaming; diagnosis and definition and, finally, estimation) is systematic and replicable in other universities yet to embark upon this integration. This case study makes a contribution towards the understanding of the complexity of the changes in Higher Education and the ways to approach it.
training enabled the students to work on sustainability in a cross-curricular manner and successfully develop ER projects centered on different SDGs. These conclusions will encourage teacher education institutions to integrate SDGs in their curriculum.


Massive Online Open Courses (MOOCs) offer the opportunity to implement a quality education timetable for those who lack the means due to economic, travel, or temporary availability limitations. Because of this, some non-governmental development organizations (NGOs), working in Latin American countries, are trying to implement this type of educational model within their educational projects. This article presents a case study on the development of a MOOC within the framework of international development cooperation carried out by an NGO and the National Autonomous University of Nicaragua. The research aims to analyze the opportunities and challenges of free, open, online teaching as a tool for achieving Sustainable Development Goal 4, and explore new educational possibilities to train people and contribute to the development of the communities in which they live. From a qualitative approach, grounded theory has been used as a holistic methodology for collecting, analyzing, and interpreting data, allowing the generation of theory in a systematic way. The most effective pedagogical models are evidenced to achieve the learning objectives and observe the challenges to be faced in order to achieve the effectiveness of MOOCs in this context. In conclusion, more applied research is needed to address the challenges that today's societies, in times of pandemic, are facing at an educational and sustainability level.


This special issue of Higher Education focuses on higher education and the Sustainable Development Goals (SDGs). The 17 SDGs adopted by all United Nations member states in 2015 cover a broad range of issues related to socio-economic, environmental and technological development, and apply to all of the world's countries, and not only those normally considered to be ‘developing’ or ‘emerging’. As part of its broad remit, the SDGs expanded the focus beyond primary and secondary education to include tertiary education. This was an important move as higher education was missing from the international development agenda as evidenced by previous sets of development goals—the Millennium Development Goals and Education for All.


The professional development of Higher Education teachers in Education for Sustainability is a priority to provide quality to universities and thus responds from this area to socio-environmental issues framed in the 2030 Agenda through the Sustainable Development Goals. This research aims to value an experience of teacher training, professional development and the mentoring program "Academy Sustainability Latin America" (AcSuLA) carried out between several Spanish universities and several Latin American universities from three different countries (Colombian, Peruvian and Chilean universities). The methodological logic of participatory action research, in a framework of Network Type 4.0, and the mentoring strategy have allowed us to identify facilitators, barriers, and future challenges present in the training processes of the Latin American universities participating in the sustainability program. The results show the barriers and facilitators in 7 dimensions of analysis (curriculum, teaching staff, academic leaders, institutional culture, institutional leadership, local context and global context) that show how the lack of support and commitment from the university political framework or the lack of allocation and recognition for belonging to the project can have some significant difficulties when implementing the program. Although, a set of facilitating elements of the process that have to do with the generation of synergies and interpersonal and inter-institutional work networks overcome these obstacles, and favor a change in the management models and teaching practice that make this project, an innovative initiative to exploit and expand to other contexts.

Purpose

Higher education institutions are widely known both for their promotion to education for sustainable development (ESD) and for their contribution as living labs to urban management strategies. As for strategies, smart and learning campuses have recently gained significant attention. This paper aims to report an air quality monitoring experience with focus on the smart and learning campus and discuss its implications for the university context with regard to ESD and sustainable development goal (SDG) integration.

Design/methodology/approach

The air quality monitoring was held at the main campus of University of Passo Fundo and focused on three pollutants directly related to vehicle emissions. The air quality index (AQI) was presented on a website, along with information regarding health problems caused by air pollution, main sources of emissions and strategies to reduce it.

Findings

The results showed how the decrease in air quality is related to the traffic emissions and the fact that exposing students to a smart and learning environment could teach them about sustainability education.

Practical implications

This case study demonstrated how monitoring air quality in a smart environment could highlight and communicate the impact of urban mobility on air quality and alerted to the need for more sustainable choices, including transports.

Originality/value

This paper contributes to the literature by showing the potential of a smart-learning campus integration and its contribution towards the ESD and the UN SDGs.


Higher education institutions and lifelong learning opportunities offer important skills and knowledge for developing the complex, sustainable, and integrated solutions that the Sustainable Development Goals (SDGs) require. Utilizing interview data from a retrospective study of 14 African alumni of a US public land-grant institution, this research explores alumni's lived experiences to understand how their graduate education contributed to post-graduate civic engagement activities that are aligned with the SDGs. Each individual's social, civic, and political experiences are mapped along a spectrum of political and civic engagement to provide a foundation for drawing out the types of capacities developed. We contend that developing greater capacity for civic engagement may contribute to sustainable development as outlined in SDG 4.7. Findings indicate that while alumni experiences varied, the majority of alumni had greater engagement post-degree. Core capacities developed among alumni, which may have contributed to this engagement, include researchers' empowerment through development of hard and soft skills, expanded networks, and enhanced confidence for graduate students both intrinsically and because of the credential they achieved.


Purpose

The purpose of this study is to know the contribution of service-learning (SL) on the awareness-raising and sensitivity with regards to sustainable development goals (SDGs) in physical education teacher education (PETE) programs.
Design/methodology/ approach

The research used a qualitative methodology with a case study design from an ethnographic-interpretative approach. The participants were 81 higher education level students from the PETE program. For the collection of information, the following techniques and instruments were used: non-participant observation, students' portfolios, focus groups and group-interviews.

Findings

The main findings show the teaching positive features of SL experiences in the PETE students. In alignment with the sustainable development model, the findings suggest that SL can boost and strengthen knowledge, comprehension, sensitivity and compromise in relation to the SDGs. It can be concluded that SL allows teacher educators to train socially critical professionals and to progress toward a sustainable development.

Originality/value

SL emerges as an appropriate pedagogical model to meet the educational needs of higher education and to face global challenges in relation to the sustainable development of the planet.


As one of the Sustainable Development Goals of the United Nations' 2030 Agenda, gender equality is a necessary foundation for a peaceful and sustainable world. The integration of the frameworks of analysis and action provided by gender perspective into the design, development and assessment of any program related to university education, research and management is essential to the fulfillment of both quality higher education and an effective transfer of knowledge and values to society. Starting from a standpoint of commitment to this progressive outlook, this essay focuses on the specific case of the University of Alicante, Spain, and on its Architecture studies. It seeks to underline the achievements of this institution in the fostering of a critical spirit and the empathy of its students by way of the implementation of gender perspective as a tool for the conception of complex, diverse and integrating projects, aligned to the objective of mutual care between people and the environment. This is crucial for the co-education of future generations of architects, who will play a central role in the definition of new practices and policies related to space and materials, which favor a more sustainable, inclusive and caring scenario for both humans and non-humans.


Higher education institutions (HEIs) have voiced growing concerns about sustainability issues since Agenda 2030 was approved, but this is not enough for societal stakeholders seeking and delivering innovation and excellence. The 17 Sustainable Development Goals (SDGs) were adopted by all UN Member States in 2015 as a universal call to action, and pose a challenge for HEIs as for the efforts made to fulfill them and knowing how to assess their performance. However, the metric management system implemented by HEIs quickly led to rankings emerging, which compare HEIs to metrics not related to the sustainability dimensions of the 17 SDGs. The main aim of the paper is to assess the level of reporting and alignment of SDG achievements with the overall the Times Higher Education (THE) ranking score. For this purpose, our study (i) models and quantifies the impact of HEIs’ disclosure of SDG information on HEIs’ overall THE Impact Rankings score, (ii) analyzes whether the best ranked universities are indeed significantly related to different SDGs than other not-so-well-ranked ones, and (iii) models the differences in the overall score and its alignment with distinct SDGs by dimensions, subjects, and geographical regions. In order to do so, a descriptive analysis, non-parametric tests, and linear and logistic regression analyses were performed. Our results reveal that the overall ranking is related to the reporting of HEIs’ SDG achievements. Moreover, the more positive actions related to health, education, industry, responsible consumption and production, climate action, and partnerships there were, the higher the position of HEIs in the general ranking was. However, we found differences between top-ranking universities and others in geographical location, disclosed information, and impact. Thus, the best-ranked universities are more committed to transferring knowledge to industry to satisfy its needs (SDG9), support strong institutions in their countries, and promote
peace and justice (SDG16). Finally, SDG9 and SDG17 are the most relevant and constant SDGs when modeling the alignment of SDGs with HEIs’ dimensions (teaching, research, citations, industry income, international outlook) and subjects (technological and social sciences and humanities). HEIs integrating SDG actions into the strategic management of universities and, consequently, reporting their SDG performance to promote sustainability and contribute to sustainable development, is advisable.


The University Jaume I of Castellon (Spain) launched the "ImpSDGup" course in 2017. The aim of this training course on professional education for sustainable development (ESD) skills and competences for higher education teachers is to help academics in reorienting their subjects’ curricula in order to contribute to the sustainable development goals of the United Nations' Agenda 2030. The "ImpSDGup" course is based on the Training Model in Transformative Action for Sustainability (TMTAS) model that is structured in three main areas: the content on sustainability, the theoretical approaches, and the ESD teaching and learning methodologies. In this paper, we describe the design and the contents of the training course and we investigate the changes that participants of the course implemented in the design of their subject programs. The methodology of the study was based on content analysis. The main results show that most of the 55 university teachers that undertook the course in its three editions succeeded in transforming course objectives and that they incorporated some of the SDGs and several ESD active learning methodologies in their teaching. As a consequence of this, we consider that the course helps in enhancing university teachers’ ESD professional competences.


We present several Service-Learning projects developed considering Sustainable Development Goals to provide the students skills for the support of a sustainable society. This project begins with collecting initial impressions from surveys and reflections to know both the students’ expectations and their degree of involvement in the development of a sustainable society. Next, the students design academic projects taking into account the needs of the specific collective to which the Service-Learning activity is oriented. When this design has finished, such projects are developed with the users and the activity is evaluated. During 2019-2020, these projects were done with four entities oriented to people either with Asperger’s syndrome, Down syndrome, Alzheimer’s disease or mental health illnesses. A total of 35 and 10 students, respectively, from the Bachelor’s Degree of Engineering in Industrial Design and Product Development and from the Master’s Degree in Professorship of High School have participated in this experience. We analyze the results from the perspective of the different agents involved, considering both qualitative and quantitative metrics. The results show that both users and staff are satisfied with this collaboration between the university and their entities. Moreover, this experience clearly has contributed to a better personal and professional student’s development.


Education for sustainable development (ESD) has presented long-lasting interest for researchers and policy makers. Despite a significant body of research, more in depth empirical studies are required for a better understanding of how sustainable development goals are applied in higher education and how sustainable behavior could be shaped via ESD. The need for this kind of research arises from, first, the scarceness of existing studies that explore economic and business higher education, and, second, the necessity to properly assess the connection between ESD principles and students’ behavior. Following this rationale, the present paper aims to provide an overview of how students’ sustainable behaviors are shaped via their perception of sustainable campus initiatives, teaching staff involvement and curricula. Statistical and econometric analysis applied on data collected via a survey on students from Bucharest University of Economic Studies (N = 1253) provides findings on the extent to which the awareness of sustainable development-specific issues acquired through education leads to sustainable behavior among students. According to the results, we argue that an increasing share of sustainable development topics combined with teaching staff involvement to raise awareness of sustainability
issues are crucial to students' sustainable behavior. However, on-campus actions are unlikely to change behavior unless they are optional rather than compulsory. Our findings ratify that, since education is one of the main drivers of sustainable development, there is an urgent need for coherence in shaping higher education according to sustainability issues.


https://doi.org/10.3390/su12208430

Sustainable Development Goals (SDGs) reflect the relationship among social, economic, and environmental aspects of society. Massive online open courses (MOOCs) represent an opportunity to promote lifelong learning (SDG 4), complementing university education or providing knowledge to society free and openly. The objective of this work is to analyze experiences in one MOOC about wastewater treatment applied to higher education in civil engineering (SDG 6). The proposed educational methodology and the achieved participation results are studied. The MOOC had three editions and was hosted on the Miriadax platform. Data about sociodemographic characteristics, initial motivation, and satisfaction level were collected from questionnaires. The results highlighted the importance of design decisions to obtain a high completion rate: defining a target audience, without prejudice to the course’s open character, where the prior knowledge of students is crucial. The teaching methodology is based on autonomous and progressive learning, with short and direct master classes, social support, with the motivation of students to continue their training with opening complementary topics in the forums, following up on their doubts, and their combination with social networks.

**Hajdukiewicz, A., & Pera, B. (2020). Education for Sustainable Development-The Case of Massive Open Online Courses. Sustainability, 12(20), 1-20.**

https://doi.org/10.3390/su12208542

Education for Sustainable Development (ESD) is a key instrument in transforming societies towards sustainable development, which can play a crucial role in the achievement of Agenda 2030 Sustainable Development Goals. The main purpose of this paper is to explore the current status and problems of implementation of Education for Sustainable Development by examining the sustainability-related knowledge content included in the higher education curriculum, with a special focus on the Massive Open Online Courses (MOOCs). We used both qualitative and quantitative data collection and analysis methods, including keyword analysis of selected MOOCs' syllabuses, to capture the nature of the studied phenomenon and enable assessment of the degree to which the sustainable development goals are integrated into the learning content. We found that most of 17 SDGs are reflected in the MOOCs learning content, but in case of some learning topics, such as "Zero hunger" and "Peace, Justice and Strong Institutions", a bigger effort should be made to include them more broadly in the curricula. The research results can support educators' efforts in identifying and incorporating challenging issues within the processes of curriculum development, indicating the need for a holistic and interdisciplinary approach, in which sustainability should be mainstreamed into all aspects of education.


https://doi.org/10.1007/s10734-020-0617-2

Sustainable Development Goal 16 commits to 'promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels'. While the concerns of SDG16 with violence reduction, rule of law, and governance are relevant to all societies, this paper focuses on fragile and conflict-affected countries, many of which have the hardest task in achieving SDG16. It analyses how higher education can contribute towards or detract from SDG16 through teaching, research, governance, and external leadership. It then analyses four dynamics influencing the agency of universities in fragile and conflict-affected contexts in engaging with SDG16: resource mobilisation and the public good; securitisation; academic freedom, insecurity, and politicisation; and tensions between demands for localisation and the universalising logics of liberal peacebuilding models and the SDGs.


https://doi.org/10.1007/s10734-020-00597-0

Universities play a critical role in the delivery of the Sustainable Development Goals through the third mission, i.e. public engagement activities. However, female academics miss opportunities to be part of this mission because they are caught in many roles that prevent them from getting involved in the SDGs. In light of SDG5, Achieve
gender equality and empower all women and girls, we conducted interviews with twenty female academics from Iran and the Philippines to investigate their aspirations, opportunities and experiences with public engagement activities. Our findings show that, while recent gender policies have enabled female academics to develop robust careers, their contributions beyond the walls of the university remain limited because of longstanding patriarchal structures, distrust in women’s professional expertise and unchanged systemic constraints. By bringing women’s engagement activities forward and supporting them in the delivery of the SDGs, we reframe current debates on women’s roles in academia. We argue that HE institutions may enhance their third mission and better achieve the targets of SDGs by valuing women’s work and facilitating their engagement activities that may lead to significant societal impact. We conclude our paper with a series of recommendations for policy and practice that support women’s journeys in academia.


In 2015, the United Nations General Assembly established the 17 Sustainable Development Goals (SDGs) with three major global initiatives: end poverty, fight inequalities, and combat climate change. Partnership is a central component of such efforts, with the UN calling everyone to get involved in large and small ways to accomplish the SDGs. The purpose of this study was to explore if and how HRD graduate education programs in U.S. colleges and universities are engaged in critical discourse that incorporates the SDGs through course offerings and program goals. We explored the visible ways that HRD programs in higher education institutions contribute to the advancement of the SDGs' global agenda. From our review of graduate courses at HRD Program Excellence Network (PEN) institutions, we found limited evidence of courses that significantly address HRD's role in advancing the global agenda for human rights, social justice, and environmental health.


Universities are engines of societal transformation and can nurture future citizens and navigate them towards sustainability through their educational programmes. Here, we developed an assessment framework for educational institutions to evaluate the contribution of their educational programmes to sustainability by reviewing the alignment of their intended learning outcomes to the enabling conditions for a vision of sustainability based on the Sustainable Development Goals (SDGs). The tool is based on a systemic grouping of the SDGs into eight sustainability attributes, namely, Safe Operating Space, Just Operating Space, Resilient Sustainable Behaviours, Alternative Economic Models, Health and Wellbeing, Collaboration, Diversity and Inclusion, and Transparency and Governance, and uses a word code developed specifically for each sustainability attribute to assess the coverage of the SDGs in master’s programmes’ learning outcomes. The tool uses multi-criteria analysis to compare and rank programmes according to the alignment of their learning outcomes to the sustainability attributes and their contribution to sustainability. It was first tested using data from a University’s eighteen master’s programmes on a range of subjects and subsequently applied to compare forty UK and European master’s programmes focusing on environment and sustainability. Findings demonstrate that even environmental programmes face some important gaps related to health, wellbeing, diversity, inclusion, and collaboration, amongst others, and reinforce the need for all universities to understand the contribution of their programmes to sustainability. The application of the tool can generate empirical evidence on the effectiveness of university programmes and establish a strong argument regarding the potential of education as a tool for achieving the SDGs.


The university is a key agent in the process of transformation towards sustainability within the framework of the 2030 Agenda. This study aims to analyze the usefulness of the collaborative learning methodology through a serious game (SG) in the university environment to increase the level of knowledge and the importance given to the Sustainable Development Goals (SDGs) by students. Through ex ante and ex post questionnaires, the degree of variation in the knowledge acquired and importance given to the SDGs was measured. To compare the midrange of these two samples and determine whether differences existed, we applied the Student and
Wilcoxon-tests. The results indicate that the methodology used produced an improvement in knowledge about the SDGs. Therefore, it is concluded that the university should promote this type of workshop and SG activities to contribute to the achievement of the SDGs, both in the Bachelor’s Degree in Primary Education and in degrees of other disciplines. Moreover, we have encouraged active learning of the SDGs through collaborative workshops using the design thinking method and an SG called “The Island”, which, based on certain economic, social and environmental information, puts students in a position to govern resources to meet the needs of its population.


Purpose This paper aims to unveil how sustainability is integrated into the courses/programmes of higher education institutions. The research question addressed is: how do academics representing different disciplines cooperate and engage in the work of integrating sustainability into their teaching programmes. Design/methodology/approach This paper draws upon the notions of practise variation and institutional work from institutional theory and empirically focusses on the case of Kristianstad University (Sweden). This case is based on an autoethnographic approach and illustrates the experiences shared by six colleagues, representing different disciplines, engaged in implementing sustainability in their courses/programmes. Findings The findings highlight how academics representing different disciplines, with specific traditions and characteristics, face the sustainability challenge. Despite being bound by similar sustainable development goals, differences across disciplines need to be acknowledged and used as an asset if trans-disciplinarity is the ultimate goal. Research limitations/implications Although the intrinsic motivation of individuals to work with sustainability might be a strong driver, the implementation of sustainability within courses/programmes and across disciplines requires joint efforts and collective institutional work. Practical implications By highlighting how academics engage in the work of integrating sustainability, this study emphasizes that managers of higher education institutions need to account for the time and additional resources needed to ensure that academics effectively cope with sustainability. Intrinsic motivation may not last if organizational structures and leadership are not supportive on a practical level and in the long run. Social implications With the successful implementation of a holistic approach to sustainability, students will have better insights and understanding of both themselves and the surrounding society, laying the ground for an inclusive future society. Originality/value This paper emphasizes the gradual approach to be followed when sustainability becomes part of an organization-wide discourse. Dialogues within and across disciplines are needed to overcome silo thinking and stimulate cooperation within a trans-disciplinary approach.


Purpose The purpose of this research is to analyse how to adapt teaching and learning methodologies to new generations of digital natives to promote their commitment to sustainable development. The research explores the existence of a relationship between digital natives’ characteristics, individual dynamic capabilities and their commitment to innovation and therefore to sustainability. Design/methodology/approach A structural equation model is used to test the proposed hypothesis by a survey conducted with 532 digital-native higher education students. Findings The results show the existence of a significant relationship between digital natives' competences, individual dynamic capabilities and a better approach to managing situations with regard to relationships with key stakeholders and the fostering of innovation and commitment to the social and environmental issues demanded by society. Research limitations/implications The limitations of this study are that it is based on a sample from a specific Spanish university that cannot be representative of all digital natives from all universities and different cultural contexts. The variables measuring the characteristics of digital natives have only recently been used in the academic literature. Practical implications The research proposes including individual dynamic capabilities and innovation courses in sustainable development education to accelerate the implementation of sustainable development goals. These research findings can be used as insights into the development of university programmes and courses. Originality/value This research is one of the first attempts at understanding how to promote education for sustainable development among digital natives and at identifying them as future change makers for sustainable development.

The purpose of this article is to present a didactic proposal framed in Education for Sustainable Development (ESD) that incorporates the Sustainable Development Goals (SDGs) to allow students deepen on global issues in the Chemical Kinetics (CK) subject in higher education. The activities of CK will be described and the relationships between the SDGs and the acquisition of competences and contents will be established, with particular attention to sustainability as a cross-cutting theme. The analysis of an anonymous survey will be presented in order to obtain quantitative data and thus to value the effectiveness of the activities framed in the ESD that students carry out in the subject. The survey reveals that students have become aware that in addition to acquiring knowledge, they also deepen on the SDGs, and on social competences that will be useful for both their lives and their professional careers.


Currently, both in the workplace and in education, mobile devices are used, thanks to the fact that they provide new learning opportunities. The article analyzes the importance of technology and mobile devices in the educational field, which have positioned themselves as necessary allies to promote the change of schemes in education, with mobile learning being part of the goals of information technology and communication (ICT), as they are easy to transport and increasingly accessible, are tools that can improve education and speed up the implementation of the Sustainable Development Agenda.


Universities play a crucial role in the short-term implementation of education for sustainable development goals (SDGs). The fourth SDG aims to "ensure inclusive and equitable quality education and to promote lifelong learning opportunities for all". Indeed, SDG4 is not intended as a goal in itself, but rather, a tool to achieve different goals and explore the best practices, via deductive-theoretical or inductive-experiential methods. Still, current literature on education for SDGs does not always consider the infrastructural and practical factors affecting the success or the failure of the practices mentioned above. The main purpose of this paper is to organize and describe a set of ongoing education for sustainability strategies that took place from 2016 to 2019 in Italian universities. Eighteen best practices have been collected after a national call by the Italian Network of Sustainable Universities (RUS), that aimed to map the current landscape of SDGs-related actions. Data have been analyzed based on the qualitative description provided by each university, according to four criteria: trigger, course type, approach (top-down/bottom-up) and declared mission. Results are depicted as a map of the current Italian higher education system, where a predominant mission (teaching) and a prevalent driver (top-down) have been found as the frequent features of SDGs educational initiatives. Further developments highlight the value of this first country-wide mapping of the Italian Higher Education Institutions implementing SDGs in their activities, that can avoid the isolation of individual experiences and, most importantly, can suggest some comparability and transferability criteria for similar cases.


This paper critically interrogates the Sustainable Development Goals (SDGs) in relation to higher education in low-income countries. While the SDG Goal 4, Target 4.3, calls for ensuring 'equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university' around the world by 2030, the SDGs lack targets that would make this a reality in many countries where higher education requires reform and rebuilding. Instead of providing assistance to these countries to (re)build and strengthen their fragile higher education systems and institutions, the SDGs, as expressed in Target 4.7, aim to only provide opportunities to a select group of individuals to study at universities in developed and some developing countries. This approach has failed in the past and will only lead to the creation of dependency on foreign aid and assistance and continuation of chronic lack of capacity in many countries. This paper will show that despite the rhetoric about leaving no one behind, the SDGs will leave many behind through the neglect of higher education in low-income
countries. Building local institutional and other forms of capacity in the higher education sector in low-income countries should have been one of the priorities in the SDGs. This way countries would be able to develop and strengthen universities and other institutions of higher learning and deliver quality education to their populations. The paper will map out a possible way forward for those interested in assisting low-income countries to strengthen their higher education systems and institutions as this is a prerequisite for inclusive socio-economic development and environmental sustainability.


At the UN Summit in New York 2015 it was agreed that a sustainable development of the planet is essential to strengthen universal peace in a broader capacity. On that basis, a call was made to all nations to achieve this through the 2030 Agenda. The issue is a complex one, as is evident from its 17 Sustainable Development Goals (SDGs) and their interwoven interaction. Engineering plays a leading role in achieving the great majority of the SDGs. For this reason, engineering education should focus its efforts on training engineers to be active agents of sustainability in the world. Our research question is, in fact, how the engineering higher education institutions around the world are deploying the 2030 Agenda. To answer it, we carried out a systematic review of the literature regarding SDGs and engineering schools in the Scopus and Web of Science (WOS) databases. We applied PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) methodology and, as a result, 22 papers were thoroughly studied. The results showed a consensus on the need for collaboration among the different stakeholders to achieve the desired degree profile of responsible engineers. Proposals to ensure this are diverse. They range from changes in curricula and competencies to a variety of teaching-learning strategies. Finally, future lines of research are identified from this study.


This paper investigates the efficiency of European universities in achieving Sustainable Development Goals (SDGs). We make use of newly published University Impact Rankings that account for SDGs, whereby institutions that achieved high scores are those that are, in addition to scientific research, putting more efforts in areas such as gender inequality, quality education for all, climate change, achieving peaceful societies and economic growth. In our empirical analysis, we adopt a dual approach. At a country level, we investigate efficiency of public expenditure on tertiary education, while at a university level we analyse the efficiency of the resources employed in achieving higher rankings (in terms of SDGs). Data Envelopment Analysis (DEA) results indicate that, at a macro level, only three to four countries in our sample are fully efficient. They could, therefore, without changing government tertiary expenditures on education, produce about 20% better score on University impact rankings. At a micro level, only about 16 percent of universities is efficient. Their performance could be much improved, without increasing the inputs, especially in terms of supporting SDGs through cooperation with other countries, the promotion of best practices and the publication of data in cooperation with foreign authors.

Chang, Y. c., & Lien, H. L. (2020). Mapping Course Sustainability by Embedding the SDGs Inventory into the University Curriculum: A Case Study from National University of Kaohsiung in Taiwan. Sustainability, 12(10), 1-21. https://doi.org/10.3390/su12104274

A course inventory module, based on the Curriculum Framework for the Sustainable Development Goals (SDGs) published by the Commonwealth Secretariat, has been embedded into the online curriculum system at the National University of Kaohsiung (NUK) since 2018. The primary aim of this study is to explore the sustainability status of the course offerings and to understand the interdisciplinary capacity in pursuing the SDGs at NUK. At the university level, a total of 1200-1300 courses (approximately 57% of courses) were reported to be related to SDGs, where the curriculum of NUK mainly emphasized SDGs 3, 4, 8, 9 and 16. However, our study indicates that many SDGs are still not focused in the curriculum of all colleges. Two patterns of the SDGs-related course framework were observed at the college level: One is the college course offerings linked to a wide variety of SDG content; while the second pattern is the college course offerings linked only to specific SDG content, mainly dependent on the subject areas of colleges. Our study suggests that the number of SDGs covered by a course reflects the diversity of the sustainability topics covered in the course. The metric gives an indication of the areas covered and, thus, also points to blind spots (i.e., insufficiencies). Moreover, it can also give an indication of the diversity within colleges, which could suggest future paths for transdisciplinary development. An understanding...
of the baseline status of sustainability in the university curriculum provides opportunities for universities to plan their strategies for sustainability and prioritize the allocation of resources accordingly.


Challenge-Based Learning (CBL) is an innovative teaching methodology that engages students to resolve real-world challenges while applying the knowledge they acquired during their professional training. This article describes the results of the implementation of an online course on entrepreneurship that utilized CBL with a group of 20 undergraduate students from various disciplines in a university in Mexico. During the course, challenges related to the Sustainable Development Goals of the United Nations were presented to the participants, making it possible to observe the students’ interest in resolving these problems. This research uses a case study methodology and seeks to determine the CBL elements in the e-learning modality. The results showed that the participants generated sustainable business ideas aimed to resolve local, national, and global problems. The recommendations are to continue the formation of the businesses proposed in the project. These ideas can become real ventures that connect various actors in the entrepreneurial ecosystem and will continue to strengthen transversal skills such as teamwork and communication.


Higher education institutions are increasingly pursuing sustainable development goals in engineering and technology education. The concepts related to operations, production, and consumption continue to gain importance and significance for engineering students. In the engineering profession, the incorporation of sustainability means integrating environmental, economic, and social factors into the evaluation of design processes, products, and services. Therefore, it is necessary to develop an engineering program that along with the technical content, also fosters a critical sense regarding the social and environmental aspects of the field. The current status of sustainability education in engineering programs offered in Saudi universities is not very promising. In this paper, we explore the use of existing university curricula to incorporate sustainability elements into engineering education and training. Sustainability concepts were introduced into selected courses by using a micro-curriculum approach. Moreover, a standalone course is also introduced. We observed that this approach has been successful in integrating sustainability into the engineering curriculum. We recommend that such an approach be used to develop sustainability awareness in engineering programs.


National education policies are increasingly regulated by international agendas, for example the Agenda 2030 for Sustainable Development (SD). However, in order to put such policies into practice, social actors like teachers and teacher educators must include them in their practices. In this context, this study stems from the following research question: how does initial teacher education (ITE) promote the SD Agendas (2030 and 2063 for Africa)? The approach to this question is carried out through a case study focused on an Angolan teacher education higher education institution, in its graduate course for future secondary school biology teachers. The main aims of this study are (i) to characterize how ITE includes SD and (ii) to suggest ways to improve SD, particularly focusing on students’ future professional needs. Data were gathered from document analysis (the pedagogical curriculum plan of the course; titles and abstracts of final-year future biology teachers' essays) and an interview with the course director of the biology teaching program of the Angolan institution. Content analysis of the gathered evidence was based on a three-dimensional framework: (a) SD goals (SDG) and the curriculum; (b) teacher education principles; and (c) current Angolan curricular perspectives. Results show that although the Pedagogical curriculum plan and the formative path, from the interviewee’s point of view, do not explicitly integrate SDG and its challenges for biology ITE, the majority of essays analyzed are locally contextualized and in a number of cases articulated with some of the 17 SDG. Suggestions for inclusion of SDG in ITE and for teacher education research are put forward.
In the framework of the Sustainable Development Goals, higher education has been given a key role in addressing societal challenges, reducing poverty, ensuring sustainable livelihoods and protecting the natural environment. Yet there has been a singular lack of imagination as regards the institutional forms that might help support this vision. This article reports on the findings of an exploratory qualitative case study of the Intercultural University of Veracruz, one of a number of institutions created in Mexico to ensure access for indigenous populations, to promote local development and to provide a space for intercultural dialogue. The findings show a number of ways in which this innovative institution provides opportunities for supporting the SDGs that go beyond conventional universities. The university addresses SDG4 by enabling access for marginalised populations, and through its engaged teaching, research and community engagement also contributes to environmental protection, health, livelihoods, gender equality and a range of other goals. However, it also presents challenges to the global framework, highlighting the lack of attention to culture, language, identity and knowledge traditions, and in critiquing the very basis of its conception of development. Implications are drawn out more broadly for the relationship between higher education and international development in the contemporary era.


Currently, higher education (HE) institutions include sustainability concepts into their programs. Previous literature examined the opportunities and challenges of integrating sustainability at an institutional, curricular, and instrumental level. We administered the Sulittest (sustainability literacy test) and a survey to first semester students at one international hospitality management school in Switzerland. While our students scored slightly higher than the Swiss average, the lowest scores recorded derived from the category knowledge - role to play, individual & systemic change. The survey demonstrated students' high interest and strong support of sustainability in their academic and professional careers. Over 67% of respondents rated sustainability for their professional lives as extremely important. HE institutions have the opportunity to teach sustainability concepts that resonate with students. While research promotes embedding sustainability in all courses, our results show that students' sustainability knowledge can improve in one intensive course. Further studies must be conducted to confirm retention and engagement.


Purpose

The study aims to examine the vertical integration of the sustainable development goals (SGDs) in Portuguese public higher education institutions, namely, at the level of undergraduate and master’s degrees, and the extent to which Portuguese higher education institutions (HEI) are preparing for the United Nations’ call to promote SDGs.

Design/methodology/approach

A content analysis of the designations and objectives of the 2,556 undergraduate and master’s degrees (in 33 Portuguese public higher education institutions) was done to determine whether they promote at least one SDG.

Findings

The results show that 198 courses directly address at least one SDG; on average, each higher education institution (HEI) has six courses that explicitly address at least one SDG; universities have more courses in SDG areas than in polytechnics; more master’s degrees embrace SDGs than undergraduate degrees; and most of the courses addressing SDGs are from the social sciences and humanities areas and from natural and environmental sciences.
Originality/value

This paper serves to raise the awareness of Portuguese HEIs of their role and responsibility in furthering SGD.


The doctrine of Sustainability Science (SS) is widely acknowledged as a tool for attaining global sustainability and is becoming the core philosophy of national and international developmental agendas. Goal 4 of the United Nations-Sustainable Development Goals (UN-SDGs) clearly acknowledges the role education plays in the promulgation of Sustainable Development (SD) by acting as a thread that concatenates the other SDGs. Hence, it is gaining global popularity as an academic discipline. However, SS as a standalone course is yet to gain prominence in Indian education systems, even though certain principles and practices of this science have been included within existing courses like Environmental Sciences. The present work thus aimed to bridge the gap between SD and education through the incorporation of sustainability tenets within universities of India. The methodology involved an assessment of research dedicated towards environmental and social issues in India and identification of possible entry-points for SS within higher education through detailed scanning of the academic programs of various Central, State and Private Universities. Results indicated that none of the universities were offering SS and only half of the universities surveyed provided Environmental Sciences. Therefore, a template for SS syllabus relevant in the Indian context was designed. Besides, two models namely the 'infusion model' for introduction of SS as a separate academic course and the 'diffusion model' for customization of the existing courses by integrating the principles and practices of sustainability were also proposed. We conclude that the effective utilization of these models can propel the implementation of SS within Indian higher education for nurturing a future generation of students having sustainability ethos in their words and deeds for addressing the developmental challenges of India. (C) 2019 Elsevier Ltd. All rights reserved.


The environmental, nutritional, and socio-economic issues in the globalised agro-industrial food system are at the center of political agendas, reform programmes, and sustainable curriculums in higher education institutions to accelerate the sustainability transition of food sociotechnical systems. Despite the societal importance of these issues there is little proposals aiming to address sustainable development goals in food science and engineering curriculums. However, promoting project-based learning by students on how to develop eco-designed business models and eco-innovated food products seem to be an essential lever for the sustainability transition. This paper describes how a consortium of French agri-food engineering colleges implemented sustainable development goals via the governmental Idefi-EcoTrophelia programme. Through two cases, we show how the students used engineering and managerial knowledge to eco-design business models and to develop entrepreneurial capabilities to establish green ventures to commercialise their innovation. To analyse these projects we propose a sustainable business model canvas that describes the processes through which food eco-innovations were developed and transferred from the research institutions to industries and consumers. This model facilitates understanding how the sustainable development goals transform food sociotechnical systems to create societal values.


Higher Education Institutions (HEIs) have the mandate of promoting sustainability through addressing the Agenda 2030. However, how this is being understood and framed in both discourse and practice by HEIs remains an underexplored issue. This article interrogates the concept of sustainability embraced by ten key HEIs networks at global and regional levels while identifying and discussing the main pathways for action displayed. We rely on HEIs networks’ data from available online documents related to the Agenda 2030. "Greening" is the dominant sustainability discourse among the global and many regional HEIs networks, that is, the one that refers to the links between people, planet and profit. Two other discourses are minor and regional, "resilience" and "alternative". The "alternative" discourse is the only one entailing a critical approach to the Agenda 2030 goals. All networks promote changes in HEIs organizational culture to embed sustainability values in strategic planning,
academic and managerial work. Yet there is a need for further engagement with society to readdress HEIs societal role. Deep and critical reflection of the worldviews, contradictions and tensions in the discourses and practices proposed by HEIs networks at global and regional scales is also needed to build common pathways toward sustainability.


Opportunities exist for nutrition and dietetic (N&D) professionals to contribute to sustainable development and support actions towards the attainment of the UN's Sustainable Development Goals (SGD's). Students undertaking higher education are well-placed to develop skills and capabilities in creative and critical problem solving for sustainability. However, there is limited literature exploring nutrition and dietetic students' perceptions of sustainability that would help to inform an effective and constructively aligned embedding of sustainability content and active learning opportunities into curriculum. This descriptive cohort study design utilised a 17-question online survey to explore 95 Australian N&D undergraduate students' self-reported familiarity with and perceived importance of sustainability and related concepts, and view of sustainability for future practice. Participants reported being more familiar with the term environmental sustainability and related concepts than economic or social sustainability. Varying levels of familiarity of 42 sustainability related concepts within economic resilience, environmental integrity, social development and cross-cutting issues were reported. Most participants (82%, n = 78) reported sustainability was very important in general (82%, n = 78), and for professional practice (63%, n = 60). Over half of the participants identified government led initiatives to address the future of society (65%, n = 71). Our study highlights the complexity of sustainability in a discipline specific context and the need for understanding students' perceptions of sustainability to inform N&D curriculum design.


In this study, we analyze the development of key professional skills for sustainability (KPSS) in university students using serious games (SG) from a sustainability perspective. Sustainable Development Goals (SDGs) were set by the United Nations' 2030 Agenda for Sustainable Development. Universities are strategic agents in the transformation process towards sustainability. Thus, universities should be committed to promoting such skills in their students through sustainable curricula by implementing active methodologies and using SG for that purpose. KPSS are essential for the development of future graduates. The aim of this study is to determine what KPSS have to be developed through the SG "The Island", in order to improve the degree of satisfaction towards the incorporation of a sustainable curriculum among the students. The data were obtained using a questionnaire and then analyzed using linear regression models, with their inferences estimated through a goodness of fit test and ANOVA. The first results indicated that implementation of the SG promoted a strengthening of the students' sustainable curriculum through the development of related skills. It was concluded that the key to success in education for sustainable development is to improve the development of strategic thinking, collaborative thinking, and self-awareness, in addition to encouraging systemic, critical, and problem-solving thinking.


Purpose

This purpose of this study is to explore the integration of the sustainable development concept and goals into the curriculum of higher education studies using the example of three faculties of the University of Belgrade.

Design/methodology/approach

A qualitative content analysis has been applied on two levels: the evaluation of the sustainability of courses starting from the criteria defined using the Sustainability Tracking, Assessment and Rating System (ASHE, 2017), and the analysis of the outcomes defined in the curricula of subjects within the three faculties using the UNESCO learning objectives related to selected sustainable development goals (SDGs) as a criteria.
Findings

While the largest number of courses were analyzed from the Faculty of Architecture, the highest proportion of sustainability courses was found in the Faculty of Security Studies. Both study areas reflect a stronger interdisciplinary orientation, although it should be strengthened in the case of the Andragogy study program. Based on the experience of the Faculty of Architecture, the courses implemented by linking theory and practice may significantly contribute to achieving the LOs and to implementing the education for sustainable development. At the University of Belgrade, strategic documents are missing that would encourage and oblige the faculties to apply the concept of sustainability.

Originality/value

This is the first study to apply this type of curricula analysis at the University of Belgrade. It is performed by teachers from the university, coming from different disciplinary fields but oriented towards an interdisciplinary perspective. Although performed in three specific study areas within a single university, the identified gaps and trends may be useful for planning interventions toward accelerating the implementation of SDGs in the higher education curricula.


The Sustainable Development Goals call for a "substantial increase" of international scholarships. However, the links between international student mobility and sustainable development remain unclear. By examining the perceived outcomes of a closed higher education scholarship program, this study explores the ways that alumni perceive their contributions to the development of their home countries of Ghana and Nigeria. Findings indicate that scholarship alumni from Ghana and Nigeria value and advocate for education as a mechanism for social change and view both formal and informal education as significant mechanisms for development. Specifically, Ghanaian and Nigerian alumni noted two discrete ways that education leads to social change: (1) university teaching and (2) citizenship, voter, and human rights education. This research aims to contribute to literature about the influence of scholarship program alumni on their home countries and to contribute to understanding of international higher education's role in the sustainable development agenda.


Purpose Despite increasing efforts to incorporate sustainability in curricula and practices of institutions of higher education, effective implementation remains challenging. The purpose of this study is to present an approach to incorporate sustainability into a practice-oriented research skills course, which was implemented at a small island state university in the Caribbean. Design/methodology/approach First-year university students followed a four-week course module, starting with the introduction of the sustainable development goals, and culminating in a symposium in which the students present the findings of their research projects to the campus community. Pre-course module and post-course module surveys measured the students' knowledge and perceptions regarding sustainability. These survey results were also compared with the result of a similar survey held for the university's employees. Findings The survey results suggested that following the course module increased students' knowledge about sustainable development, as well as their support for the university campus and its community putting more emphasis on teaching, practicing and encouraging sustainability. Interestingly, university employees scored significantly higher on the latter component than students, suggesting that in this case a lack of interest of the staff is not a barrier toward a sustainable campus. Originality/value The presented course module offers a novel and low-cost approach to introducing sustainability into a broad range of academic curricula, specifically tailored to the needs of institutes of higher education in small island states. The survey results suggest that this type of education may not only ensure reaching academic goals but also increase students' interest in sustainable development within their local environment.
Eight University Grant Committee (UGC)-funded public universities in Hong Kong positively and successfully responded to the global call for sustainability efforts in higher education institutions (HEIs). Various initiatives are transpiring within these eight campuses. The Hong Kong Sustainable Campus Consortium (HKSCC) was co-established by eight UGC-funded universities, which is an excellent example of integrating resources and efforts to achieve sustainable development goals and exert positive social impacts. Through interviews with HKSCC administrators and members and reviewing relevant documents, this study aims to examine the roles and challenges of HKSCC toward Hong Kong HEIs’ sustainability efforts, and present the good practices and achievements of HKSCC. Findings of this study reveal that although HKSCC and each UGC-funded university contribute in reaching the sustainability goals, they should pay considerable attention to the external impact of sustainability practices on communities and society. Moreover, we propose that the sustainable development of public universities in Hong Kong should look beyond the narrowed definition of sustainable development and broaden their roles to exert a social impact by addressing the negative consequences of the massification, privatization, and internationalization of higher education.

Background: It is widely perceived that COVID-19 has significant influence on higher education and also contribution to development including Sustainable Development Goals (SDGs). However there is insufficient evidence about investigations on such influences, especially at micro level.

Design and method: A university located in Wuhan, China, is selected for the case study to explore how COVID-19 affects higher education and how universities’ coping strategies of COVID-19 can contribute to SDGs. The method is an analysis of 32 institutional documents published by the university.

Results: The university in the case study has taken a number of coping strategies of COVID-19, largely in four aspects including medical services, online education, logistic support, and graduate employment promotion. These coping strategies contribute to achieving SDGs, especially SDGs 1, 3, 4, 5, 8, and 10.

Conclusions: The case study provides micro-level empirical evidence, which supports that appropriate university coping strategies of COVID-19 can contribute to SDGs, even it is widely perceived that the pandemic has brought strong negative impact on higher education and sustainable development. The selection of a university in Wuhan, China, can generate more practical implications, as Wuhan is the first city that experienced the unprecedented lockdown, and China is the first country that reopened university campuses after the lockdown.

The project Enhancing the skills of ESEE RM students towards the achievement of SDGs (EnActSDGs) aims to establish an action plan for the realignment of the current raw materials curricula of three universities in East and Southeast Europe towards the incorporation of the sustainable development principles into their educational programs. The action plan will be based on the educational needs of the raw materials sector as defined by academia and students, industry, and professionals. The authors present a preliminary assessment of the three universities’ study programs by using a set of assessment criteria defined in cooperation with selected stakeholders.

Background. Nutrition and dietetic (N & D) professionals can contribute to sustainable development and achievement of the United Nations’ Sustainable Development Goals. However, there are diverse understandings of what sustainability means in the N & D context which may be constraining higher education curricula. Objective
To explore the concept of "sustainability" in the context of N & D from student, academic, and practitioner perspectives. Study Design, Setting, Participants An action research process was used to explore the concept of sustainability. Data was collected sequentially, first from undergraduate students' self-reported perceptions of sustainability (n=95, self-administered online survey, open question) and then academics' perceptions of sustainability-related teaching practice (n=7, workshop) at a regional Australian university. Semi-structured interviews were then undertaken with Australian N & D practitioners (n=10) having longevity in the dietetic/nutrition profession as well as a specialist practice area. Data was analysed concomitantly and used as a sensitising device with each subsequent group. Measurable Outcome/Analysis. Students provided 4 keywords/phrases conveying their personal understanding of sustainability within the N & D context. Academics provided a written response to the question; how do you perceive sustainability? Practitioners answered questions from an interview protocol developed to enable exploration of sustainability both conceptually and in practice. Each data set was analysed for theme by 2 independent researchers. Findings across participant groups were then analysed for overarching themes. Results. Across groups, sustainability was perceived as a broad, future-focused concept, multi-factorial (environment, culture, social, economic), and relating to dietary recommendations and practices. Themes from student responses were sustainable food systems and system influencers. Academic and practitioner themes diverged to include sustaining the profession, sustaining the effects of our work, and stewardship of resources. Sustainability was characterised as conflicted, action-oriented, context-dependent, and inter-disciplinary. Conclusions. Student, academic, and practitioner perceptions may be useful in forming a working definition to clarify sustainability in the N & D context for curriculum development.


In 2015, more than 190 countries pledged to meet by 17 sustainable development goals (SDGs) by 2030 that aim to ensure sustainable global social and economic development, and to strengthen universal peace. Public institutions, businesses, organizations and individuals are all called upon to contribute to this challenge. Focusing on business schools (BSs), and the potential impact they have on graduates, we ask what they are doing for the deployment of these objectives. To this end, we conducted a systematic review of the literature related to SDGs and business schools in the WOS, SCOPUS and ERIC databases. A multi-stage exclusion process resulted in 16 documents for review. The findings of this study provide key information on the role that business schools have to play in achieving SDGs and the ways in which they can be incorporated into their activity: from more in-depth actions linked to creating awareness, questioning current paradigms, fostering cooperation and interdisciplinarity with stakeholders, and working on coherence; to more specific interventions such as creating student associations, incorporating new teaching methodologies or increasing students' participation in extracurricular activities. In addition, this study also allows us to identify gaps in the literature, giving ideas on necessary future lines of research.


Education for sustainable development (ESD) is regarded as a key element of high-quality education. Hence, the United Nations proposed the Sustainable Development Goals (SDGs) in 2015, in an attempt to achieve the harmony and shared prosperity between humans and the Earth, and advocate for fair and high-quality education. With the aim of exploring "high-quality sustainable teaching", this study intends to probe into the idea and meaning of the high-quality design education for sustainable development and elaborate on the teaching effectiveness and sustainable teaching activities by the teachers of higher design education. According to the research results, the effectiveness of high-quality teaching is introduced in seven categories, as follows: (1) Faith in sustainability in teaching, (2) the trend of talent demand, (3) the teaching value of sustainability, (4) curriculum mapping, (5) teaching approach, (6) teaching evaluation, (7) the sustainable management of teaching development. The factors of high-quality teaching include: The teacher has passion for teaching, the teacher pays attention to the student's independent learning ability, the teacher intrigues student's interest in learning, the teacher places emphasis on furnishing the student with professionalism and confidence, the teacher highlights learning through doing to increase the student's competitiveness in the job fair, the teacher reviews teaching effectiveness and makes progress in pursuing the value of high-quality ESD.
Discussions on sustainability have gained increasing evidence because of the need to reconcile development and sustainability. In this context, the Higher Education Institutions (HEI) need a methodology of action that incorporates sustainable dimensions. This study conceives the HEI's as disseminators of knowledge and with a relevant role in guiding sustainable development, and points to strategic planning as operational ally. The objective is to analyze the academic activities, in order to verify how strategic planning can contribute to the achievement of the Sustainable Development Goals. The Curricular components, research projects and extension actions were analyzed for signs of sustainability, dimensioning them with regard to the environmental, economic and social perspectives so that, in parallel with the institution strategy analysis, it pointed to improvements for the process of alignment between planning and sustainability. This is an exploratory and descriptive research, with a predominantly qualitative approach, made feasible by a bibliographic and documentary study and examined by the content analysis technique. The research revealed a university in evolution, but structured and committed to the dimensions of sustainability; consciously sustainable planning; and academic activities based on technological aspects, innovative and tending to be flexible. It was highlighted as a suggestion for improvement the implementation of an evaluation system that uses sustainability indicators, pointing out the methodology of the Sustainability Balanced Scorecard as a reference.


Understanding and learning geographic knowledge and applying it to sustainable development (SD) depends not only on the knowledge itself, but also on how it is taught and studied. The teaching and learning methods for promoting sustainability in geography have not been thoroughly studied. This qualitative study examined articles on geography teaching and SD. The material was selected using keywords related to geography education. The study describes 17 articles published in peer-reviewed scientific journals from 2008 to 2018. The focus group varied from primary to higher education. The proportion of teaching and learning methods were determined. The data were analyzed using qualitative content analysis. The foci of the analyses were the teaching and learning methods, topics, goals, and levels of thinking skills. Additionally, features of the teaching methods used in geography education, including outdoor education, to achieve the sustainable development goals (SDGs) were investigated. Different teaching methods used together and interactive learning were the most often preferred. Group work and teachers' presentations were mentioned in 12 articles, and inquiry-based learning and argumentation in half of the articles. The most often written expressions promoting SD in geography education concerned environmental sustainability (42%), followed by social (25%), economic (19%), and cultural sustainability (14%). The most emphasized features of the current teaching methods were active participation, thinking skills, animation, evaluation, dialog, demonstrations, and information and communication technology skills. The whole school approach and forward-looking perspective in geography should be implemented in school education to reach the SDGs and to support SD.


The implementations of sustainable development are a global trend and recently focus on Sustainable Development Goals 2030 Agenda. Furthermore, in ensuring the successful implementation of the Agenda, youths play a vital role in spreading awareness, knowledge and good practices in sustainable development. This research aims to determine the respondents' level of understanding as well as opinion about sustainable development values. A questionnaire survey was conducted at six higher education institutions in Penang, yielding a total of 402 respondents. Data were analysed statistically using Statistical Package for Social Sciences (SPSS) software. Based on data that has been analysed by the SPSS software, the mean result showed that respondents have a high level of understanding concerning sustainable development. Besides, the mean result also presented that respondents had positive and strong support for sustainable development. Furthermore, a Mann-Whitney test showed that there are no significant differences between gender on understanding sustainable development. Similarly, a Mann-Whitney test indicates that there are no differences between the field of study. Thus, based on the findings, it is hoped that this study could provide an insight to policy makers and educational institutions in
We will be discussing the need for a better understanding of systems thinking and the Sustainable Development Goals (SDGs) as an integration of sustainability, ethics, and responsible management in the context of the human-environment interaction system. Chemists should be part of what is described by earth systems’ science as “the new social contract” between science and society. Finally, we will explore how this can be reflected in the curricula of higher education, and we will present a University of Bristol educational initiative, Bristol Futures, that attempts to address this.


The research presented systematically reviewed the literature on education for advancing implementation of the Sustainable Development Goals (SDGs) to identify important bibliometric patterns and evidence in this relatively new, but evolving, field. To conceptualize the phenomenon, accumulated ideas from a total of 193 articles were extracted through a secondary data source, the Web of Science (TM). The analysis proceeds in two sequential steps. First, the bibliometric analysis identified the networks of co-authorship, periodicals, higher education institutions (HEI), and more influential countries. The second stage involved the analysis of the thematic content, generated by the Iramuteq software, which identified four dominant and comprehensive lenses that represent the source for the body of the literature, namely: i) indicators; ii) educational environment; iii) policies for the implementation of the SDGs or for sustainable education; and iv) Principles for Responsible Management Education. These lenses are supported by a set of perspectives and cover education; the notion that this should be the strategy for promoting sustainable development through the implementation of the SDGs; and that HEIs should develop responsible managers via the integration of sustainability, ethics, and responsible management education.


Higher education for sustainable development (HEFSD) is being significantly shaped by the global sustainability agenda. Many higher education institutions, responsible for equipping the next generation of sustainability leaders with knowledge and essential skills, proactively try to action the sustainable development goals (SDGs) in HEFSD policy, curriculum and practice through scattered and isolated initiatives. Yet, these attempts are not strategically supported by a governing approach to HEFSD or coordinated effectively to tackle social and environmental sustainability. These predicaments not only widen the gap between HEFSD policy, curriculum and practice but also exacerbate the complexities between human and environmental interactions compromising overall sustainability. However, these efforts represent a potential for actioning the Global Agenda for Sustainable Development. Based on a qualitative research strategy, theory building methodology and various methodological techniques (surveys, policy and literature review, group and individual interviews), this research suggests that the advancement of HEFSD in policy, curriculum and practice depends largely on a better understanding of existing gaps, target areas, commonalities and differences across regional HEFSD agendas. This will hopefully provide higher education institutions and their stakeholders across regions with some conceptual and practical tools to consider strategically how HEFSD can successfully be integrated into policy, curriculum and practice in alignment with SDGs and with the overall mandate of the Global Agenda for Sustainable Development.
Purpose This paper aims to share the University of Strathclyde's experience of embedding research-based education for sustainable development (RBESD) within its undergraduate curricula through the use of an innovative pedagogy called Vertically Integrated Projects (VIP), originated at Georgia Institute of Technology. Design/methodology/approach This paper discusses how aligning VIP with the SDG framework presents a powerful means of combining both research-based education (RBE) and education for sustainable development (ESD), and in effect embedding RBESD in undergraduate curricula. Findings The paper reports on the University of Strathclyde's practice and experience of establishing their VIP for Sustainable Development programme and presents a reflective account of the challenges faced in the programme implementation and those envisaged as the programme scales up across a higher education institution (HEI).

Originality/value The alignment of VIP with the SDG research area is novel, with no other FE institutions currently using this approach to embed SDG research-based teaching within their curricula. Furthermore, the interdisciplinary feature of the VIP programme, which is critical for SDG research, is a Strathclyde enhancement of the original model.


Purpose The purpose of this paper is to present a case study of how a UK business school has explicitly linked sustainability to employability and embedded these into all levels of its undergraduate and postgraduate degree portfolio. Design/methodology/approach This case study features Nottingham Business School's (NBS's) journey of linking sustainability with employability to achieve the University's strategic objectives and help deliver on the sustainable development goals (SDGs). After reviewing all courses, a cross-school approach was adopted in redesigning the curriculum, first at undergraduate and later postgraduate level. Partnerships, both internal and external were developed, involving the employability and enterprise teams, the University's students and alumni, local employers, local authorities and businesses and charities. Feedback from graduates is included. Findings When NBS introduced new undergraduate modules in 2012, there was resistance with concerns over already crammed curricula and the perceived irrelevance of sustainability. This changed as students realised that an understanding of sustainability was benefiting them at interviews and adding value to their employers. While it cannot be proved that increased self-awareness and sustainability literacy have a direct effect on graduate prospects (as measured by the Destinations of Leavers from Higher Education survey), NBS has seen the percentage of students in graduate level employment and/or study increase from 71 to 89.6 per cent over the past five years. Originality/value Linking sustainability to employability, and embedding these in the curriculum, should benefit any institution, its students, employers and society, and can be replicated anywhere in the world.


Purpose Universities can do more to deliver against the sustainable development goals (SDGs), working with faculty, staff and students, as well as their wider stakeholder community and alumni body. They play a critical role in helping shape new ways for the world, educating global citizens and delivering knowledge and innovation into society. Universities can be engines of societal transformation. Using a multiple case study approach, this study aims to explore different ways of strategizing sustainability toward delivering the SDGs are explored in a university setting with an example from the UK, Bulgaria (Europe) and USA. Design/methodology/approach The first case is a public UK university that adopted enterprise and sustainability as its academic mission to secure differentiation in a disrupted and increasingly marketized global higher education sector; this became a source of inspiration for change in regional businesses and the local community. The second case is a business sector-led sustainability-driven transformation working with a private university in Bulgaria to catalyze economic regeneration and social innovation. Finally, a case from the office for sustainability in a major US research
The role of universities as the engine of transformative sustainability toward delivering the SDGs has been explored by way of three case studies that highlight different means toward that end. The collegiate nature of the higher education sector, with its shared governance models and different constituencies and performance drivers, means that sustainability at a strategic level must be led with leaders at all levels acting with purpose. The "living lab" model can become a part of transformative institutional change that draws on both top-down and bottom-up strategies in pursuit of sustainable development.


This article analyses three of the Sustainable Development Goals (SDGs) gathered by the 2030 Agenda and adopted by the United Nations, and how online educational models may help to reach these goals. Specifically, the three goals discussed through this article are: (i) Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (Goal 4); (ii) reduce inequality within and among countries (Goal 10); and (iii) take urgent action to combat climate change and its impacts (Goal 13). This work delves fundamentally into aspects related to online engineering education, such as the impact of the carbon footprint in online education, the reduction of geographical barriers and the social gap, and the complete online accessibility to the educational environment. Finally, this article presents the case of the International University of La Rioja with its 100% online methodology, and approximately 42,000 students distributed throughout the world. This institution is supported by tools that facilitate engineering training for people with reduced mobility and who are geographically dispersed, reducing the carbon footprint through remote training.


The fact that the world community is engaged in pursuing the Sustainable Development Goals (SDGs) means that an unrivalled opportunity is provided to universities, both in respect of teaching and in research, on individual SDGs, as well as in pursuing their "third mission" linking up with external stakeholders and society. However, not many universities have realised that and many are falling behind. This paper explores the many advantages of the introduction of the SDGs into teaching and suggests that it can catalyse the engagement of students in Higher Education Institutions (HEI) with the concepts of sustainability. The paper fills in a research gap by surveying the current state of the art regarding the theme, presenting current data outlining the extent to which HEI are using SDGs to support their sustainability work. The reasons why some institutions are currently not engaging is also shown. The paper, which consists of a worldwide survey deployed to collect data on the SDGs and sustainability teaching at universities, concludes by providing some recommendations aimed at encouraging further engagement of HEI in incorporating SDGs as part of their teaching programs. This research is unique in the sense that it provides for the first time offers an overview of the level of emphasis selected universities currently place on the SDGs. Finally, it provides a contribution to current state of knowledge by outlining some actions universities may take, to move forward with their implementation.


This research aimed to identify, through the analysis of the sustainability conceptions of Business Management students from UFPB (Federal University of Paraiba), ways in which sustainability can be incorporated into their education. In methodological terms, a phenomenographic research was conducted, an approach in which the aim
is to empirically investigate the way through which people experience, comprehend and attribute meaning to a phenomenon in the world around them. Its application on UFPB took into consideration the relevance of studying education for sustainability in a university campus that is inserted in an Atlantic Forest environment. Three different conceptions of sustainability were identified: opportunity, resources and sense of collectivity, from most superficial to most deep, respectively. Research showed that most students interviewed conceives sustainability in terms of resources, making it therefore impossible to identify an expansion resulting from the formation process of these students. Five directives were appointed by students in order to incorporate sustainability in the formation of these future administrators: the creation of a specific subject focused on sustainability; the approaching of sustainability in an interdisciplinary way; practicing as a way to contribute to theory previously learned; the promoting of scientific initiation projects that deal with said topic; and the hosting of institutional campaigns of awareness on sustainability.


Goal 4 of the Agenda 2030 sustainable development goals (SDGs) is aimed at working towards quality in education. Universities have an important role in teaching sustainability principles. Yet, which methods are effective for engaging students in understanding the importance of sustainable development and introducing them to new perspectives to make changes? The methodology of the flipped classroom is a possible alternative for the pedagogic renovation. This is known as an information-based environment in which teachers provide a variety of learning resources so that students can complete the knowledge transfer process before the class. Once inside classroom, teachers and students can complete the internalization of knowledge by answering questions, and through collaborative consultations and interactive exchanges, among others. A survey of 154 students taught by flipped classroom methodology was conducted in order to analyze whether this helps with learning about sustainable development. The results show the active and reflexive learning from flipped classroom methodology makes students more committed to sustainable development. This research would be useful to anyone interested in applying the flip the class teaching methodology as an integrated form of thinking and training in the curriculum of sustainable development for higher education students.


Sustainability, as a key concept in the education field, has submitted a relevant change during the last years. Thus, there is a growing debate about its meaning. It has undergone a crucial merging of significances from many fields: Ecology, environmental awareness, but also from politics, ethics or even spiritual approaches. All these fields have been co-involved in the building of such subject concept. In this sense, this article addresses the different ways of understanding sustainability as a polyhedral concept and how sustainability can be understood under the umbrella of the Sustainable Development Goals (SDGs). Furthermore, it is proposed a conceptual framework to teach this UN Program at Higher Education, contributing to the training of undergraduate and postgraduate students from both a professional and a personal point of view. This framework is applied in a case study-in particular, in a course of Primary Teacher Degree called Didactics of Matter and Energy. This article finishes with practical consideration to build a change-maker University.


Peace in and through education has become an important educational development agenda. It has been included in human rights frameworks since 1948, and is emphasized in the 2030 Sustainable Development Goals (SDGs). Yet, there are few studies examining how Peace and Conflict Studies (PACS) scholars, and by extension the institutions they embody, translate this agenda into the classroom. This paper then critically examines how PACS scholars from one United Nations higher education peace institution understand, practice and experience the challenges and contradictions of teaching for peace in the twenty-first century. In the study, data were collected through semi-structured interviews, participant observations, and document analysis with 25 PACS lecturers and 108 postgraduate students. Findings suggest that despite aspirations toward the liberal peace ideals of
international understanding, equity and democratic peacebuilding as expressed by scholars and in peace studies literature, the practice of higher education peace pedagogy is instead imbued with ethnic, cultural, and gendered inequities. Some scholars articulated awareness of this while many others were more optimistic of the positive social change proclaimed through peace studies. Theoretical implications and two pedagogic strategies for peace are discussed.


Higher Education Institutions (HEIs) have a unique role and responsibility for the future and for driving the development of a sustainable society. HEIs are charged with the task of fostering sustainability in the leaders of tomorrow, developing solutions and methods to address a sustainable future, and ensuring that we contribute knowledge to society. HEIs must also ensure that our everyday operations and practices are consistent with a sustainable future and that we work to holistically integrate sustainability into both the mission of a university and our daily tasks.


Purpose The purpose of this paper is to demonstrate how universities can play a pivotal role in implementing sustainable development goals (SDGs). It recognises the advantage that universities have in responding to social challenges through their functions and operations, mainly through research and innovation and academic prowess. Not much guidance is available on how they can contribute to SDG implementation. The research is a case study of the University of South Africa, a distance education institution. It showcases how its science campus in Johannesburg has incorporated SDGs in its operations. Design/methodology/approach Data were collected through interviews with campus operations managers and sustainability office managers, a survey with environmental science honours students was conducted and observations of the Unisa Florida campus environment were undertaken to establish practices that contribute towards SDG implementation. Document analysis assisted in complementing the data collection process. Data were analysed by aligning practices with SDG indicators. Findings The research revealed a number of practices that align with SDGs in teaching, research, community engagement and campus operations management. Unisa is however challenged by financial limitations and as an open distance education and learning (ODeL) institution, it struggles to involve students in these projects. The paper concludes that while the most obvious contribution of universities to SDGs is towards quality education (SDG 4), higher education, including distance education institutions, can play an active role in implementing other SDGs as well. Originality/value There are few studies in Africa which researched implementation of SDGs in universities, let alone in ODeL institutions. The research revealed the challenge of involving students in sustainability practices in distance education institutions and serves as a testimony that such institutions can still have successful projects on and off campus. It suggests involving students in applied research based on the current sustainability projects on and off campus.


The Sustainable Development Goals (SDGs) constitute a working agenda for the international community with the aim of ensuring a better world for future generations. In this context, the development of competences related to SDGs is a challenge for Higher Education Institutions. Although there are several studies that address the relationship between SDGs and university teaching, the students' knowledge about this subject has not been set out yet. In order to evaluate students' knowledge, a questionnaire was designed, validated, and administered to students from different degrees. Statistical analysis showed a high reliability for the constructs (Smallest Cronbach's Alfa = 0.859). The results showed interesting insights, either with descriptive analysis or inferential ones. For example, a low knowledge, in a general way, of SDGs was identified in the whole sample; significant differences between the scores obtained in professional and personal implications of SDGs were also detected and several differences arose between Health and Education students, the latter being more professionally involved with SDGs than the rest of the students.
This paper analyzes the extent to which sustainability is present in the curricula of the 16 Education Degree programs belonging to the EDINSoST project: 6 Early Childhood Education Degrees, 7 Primary Education Degrees, 2 Pedagogy Degrees and 1 Social Education Degree. The results obtained suggest that sustainability is present in all Degrees, but not uniformly so. A great disparity is observed in the number of subjects that develop sustainability, with an average of 22.63 subjects per Degree. The competency most present is the ‘Application of ethical principles related to the values of sustainability in personal and professional behaviors,’ while the least present is ‘Sustainable use of resources and prevention of negative impacts on the natural and social environment.’ Sustainability is not developed uniformly in the different universities either. Three universities (UAM, UCA and UIC) develop sustainability competencies at 100%, while others such as the USAL do so at only 50%.


En el presente trabajo se hace una valoración de los avances en el cumplimiento de los Objetivos de Desarrollo Sostenible en América Latina y el Caribe y como los procesos de globalización han impactado a la Educación Superior generando insuficiencia y limitaciones en su proceso de vinculación con la sociedad. El estudio se sustenta en análisis de documentos nacionales e internacionales. El trabajo concluye con un conjunto de reflexiones que puede contribuir en su concepción, al interior de la universidad, desarrollar y consolidar una cultura de la calidad que responda a los intereses de la sociedad, de la comunidad, como sostén de sostenibilidad local, teniendo en cuenta que de ahí provienen sus estudiantes y que un tiempo fueron sus profesores, para no perder las raíces de la Comunidad & Universidad.


Resumen: Las universidades son agentes de cambio buscando espacios en los que fomentar la investigación interdisciplinar para lograr estilos de vida sostenibles encaminados al cumplimiento de los Objetivos de Desarrollo Sostenible (ODS) de la Agenda 2030. En este artículo se realiza un estudio de la contribución de la Universidad de Holguín (UHo) en Cuba, al cumplimiento de los ODS a partir de la situación actual de la gestión de investigación en Ciencia, Tecnología e Innovación (CTI) y sus resultados en el periodo 2015-2017. Se utilizó un procedimiento que combina los análisis cualitativo y cuantitativo. Los datos fueron recuperados a través de la triangulación de fuentes de información que provienen de análisis de documentos oficiales del Ministerio de Educación Superior y de la UHo, entrevistas, observaciones y análisis estadístico. Se entrevistaron al vicerrector, director y especialistas en gestión de CTI, presidente del consejo científico asesor, vicedecanos y jefes de proyectos. Dentro del análisis cuantitativo se introduce el cálculo del indicador Coeficiente de Resultados por Proyectos para conocer la contribución de los proyectos a los ODS. Los resultados obtenidos demostraron que la mayor contribución de la UHo es en los objetivos de educación, crecimiento económico e instituciones sólidas y que no se aprovechan las oportunidades del entorno y las potencialidades de su capital humano especialmente en los temas de energías renovables, agua y saneamiento, ciudades y comunidades sostenibles, industria, innovación e infraestructura. Este estudio contribuye a trazar nuevas estrategias que permitan a la UHo anticiparse con mentalidad innovadora a las necesidades del entorno.


Higher education is a principal agent for addressing the sustainable development goals proposed by the 2030 Agenda, because of its key mission of knowledge generation, teaching and social innovation for sustainability. In order to achieve this, higher education needs to integrate transversally the values of sustainability in the way of developing the field of management, as well as research, university life and, of course, teaching. This paper
focuses on teaching, and more specifically on the didactic strategies considered most relevant for training in sustainability competencies in college students, according to the guidelines commonly accepted by the international academic community. Through collaborative work among experts from six Spanish universities taking part in the EDINSOST project (education and social innovation for sustainability), funded by the Spanish R&D+i Program, in this paper the role of five active learning strategies (service learning, problem-based learning, project-oriented learning, simulation games and case studies) in education for sustainability are reviewed, and a systematic approach of their implementation in higher education settings is presented. The results provide a synthesis of their objectives, foundations, and stages of application (planning, implementation, and learning assessment), which can be used as valuable guidelines for teachers.


The importance of education, and ESD in particular, for achieving sustainable development is highlighted in the formulation of the Sustainable Development Goals (SDGs). Since the Brundtland Report (1987) and the Agenda 21 conference in Rio in 1992, many measures and programs have been launched. However, no widely accepted and validated assessment instruments are currently available to examine the output levels of ESD on the student side as a means to contribute to monitoring the effects of ESD initiatives. Furthermore, connections to the results of empirical educational research are often lacking. Indeed, operationalization is necessary in order to evaluate actions of fostering ESD. Taking concepts of empirical educational and other relevant research findings (for example, psychology for sustainability) into account, this study develops a reliable and valid approach to measuring sustainability competencies. In this paper, novel data of a first school assessment is presented. One thousand six hundred and twenty-two students (aged from 9 to 16) participated in the survey. The paper-pencil questionnaire covers general (socio-demographic) as well as cognitive, affective, behavioral, application- and curriculum-orientated aspects of sustainability competencies. The evidence for the validity and reliability of the instrument indicates that the presented assessment tool constitutes a suitable instrument by which to measure sustainability competencies in secondary schools. The gathered insights show a path towards the operationalization of sustainability competencies to clarify the needs and achievements of ESD implementation in schools.


The engineering academic preparation it’s a necessary element for the development of a sustainable world; the international organisations have made a special emphasis in the knowledge as a primal tool to make the actual conditions in which the world society lives gets better. In this sense, the fourth sustainable development goal (SDG) has the purpose to “ensure inclusive and quality education for all and promote lifelong learning”. This article seeks to identify the levels of implementation of the fourth SDG in the accredited engineering faculties in Colombia, through the analysis of the missions and visions proposed by the institutions. This scientific analysis is carried out by means of the Constant Comparison Method using the Atlas.ti software for the systematic study.


Higher levels of material well-being lead almost inevitably to giving priority to individualism and personal advancement, often at the expense of civic conscience. A proposal for integrating sustainability into the curriculum is presented in the third year of the degree in Early Childhood Education at the Universitat Internacional de Catalunya (UIC). Projects on sustainable food are planned and elaborated to this aim. This study seeks to apply a global and systemic approach to solving socio-environmental problems and to check whether education for sustainable development (ESD) helps to develop and encourage actions that promote sustainable development. Quantitative research was conducted using a pre-test/post-test quasi experimental design separated by a period of didactic training in the project method. The results presented in this article show the students’ sustainability competencies (SC) improve after working on didactic proposals in a global manner. It is concluded that elaborating competencies in education for sustainable development enables an integrated approach of knowledge, procedures, attitudes and values in teaching through promoting the project method in multidisciplinary and transdisciplinary teams, which enhances future teachers’ sustainability competencies.

The Expanded Student Engagement Project (ESE) has developed three comprehensive inventories which aim to increase student knowledge of sustainability-related course content and increase student engagement in on- and off-campus, curricular, and non-curricular sustainability projects at the University of Toronto (U of T). The first is a sustainability course inventory (SCI) generated using keyword search based on the UN Sustainable Development Goals (SDGs). This is the first SCI that has been based on the SDGs. The inventory identified 2022 unique sustainability courses and found that SDG 13 had the greatest representation and SDG 6 had the least. The second inventory is a community-engaged learning (CEL) sustainability inventory which found 154 sustainability-focused CEL courses and identified 86 faculty members who teach sustainability CEL. Finally, an inventory of sustainability co-curricular and extracurricular opportunities revealed that U of T has 67 sustainability-focused student groups and identified 263 sustainability-focused opportunities. These inventories are an important foundation for future initiatives to increase student engagement in sustainability on campus and in the community. The ESE will integrate this data into U of T’s course management system and use the inventories to develop a new sustainability pathways program.


Gender equality is still an issue in business schools, since women in MBAs classrooms, in faculty and in management teams have low representation. Challenges caused by lack of financial aids, salaries gap and a very masculine model avoid a better gender balance in the business graduate schools, which, globally, should lead women personal and professional development. The main objective of this research is to analyse business schools communication priorities related to gender equality projects and policies in their sustainability reports, considering these as a fundamental tool for corporate legitimacy. Through a content analysis of the sustainable reports of the top 50 business schools of the world, we elaborate a Codes Frequency Report focusing on Goal 4: quality of education (in relation with scholarships and grants allocation) and Goal 5: gender equality and we explore the correlations with the schools’ ranking positions, the price of the MBA programmes, the percentage of female MBA students, of female faculty members and women in board of directors in the different geographical areas as Europe, US and Asia. Results show that gender equality related topics are a source of positive impact and legitimacy for top business schools.


This study presents a review on the generic competences in sustainability (CS) at higher education and provides a compilation of these CS through a rubric that serves as a tool to assess the level of CS acquisition among university students of teacher training. The rubric has been designed, analysed and contrasted by a group of researchers from different universities linked to teacher training courses. It has been adapted to different undergraduate and postgraduate teaching programs at eight universities. It is structured in three levels of competency acquisition. This rubric can be a useful instrument for the assessment of CS in the degrees of education in the Spanish university system.


Fifteen years after they were created, the UN’s Millennium Development Goals (MDGs) have reached their expiration date. The United Nations asserts that surveys conducted in September 2015 suggested that only 4% of the UK public had heard of the MDG’s. The renewed focus on the Sustainable Development Goals (SDGs) offer opportunities for higher education institutions (HEIs) to work alongside students to create a shared and contextualised awareness of sustainable development within Early Childhood Education. This aim is pertinent for those students studying Early Childhood Studies (ECS) degrees with the potential goal of working with babies, young children and their families. The research was situated within a paradigm of critical educational research to
establish a shared understanding of sustainable development within a newly validated BA (Hons) ECS programme at a HEI in the Northwest of England. Visual provocations were used as a pedagogical intervention to present a disorientating dilemma, critical reflection on personal perspective and an examination of world views. Findings suggested that visual methodologies supported students to appreciate the ambiguity and contested limits of knowledge, and to draw upon wider sources related to moral and ethical principles and to established rights and responsibilities.


The purpose of this study was to survey the awareness, attitudes and actions of Thai, pre-service, industrial-education teachers (N=390) regarding economic, social and environmental sustainability. Survey items were derived from learning objectives provided by UNESCO in relation to 17 sustainable development goals (SDGs). Research questions focused on overall results as well as analyses to determine differences based on program type and year of study. Results showed an average overall higher percentage in the categories of attitudes (90%) and action (91%) than for awareness (69%). The lowest ranked items in the categories of attitudes and action were related to SDG 5, gender equality. Pre-service teachers in year two of their program reported significantly higher levels of awareness than those in their first, third, fourth or fifth year. There were no significant differences for program type. Implications point to the value for higher education institutes, programs and instructors of identifying sustainability issues most relevant to their context in terms of culture and subject area. Results also pointed to the possibility that higher education institutions may be able to address aspects of sustainability through other initiatives (e.g., mental health awareness days) that are not necessarily branded specifically as sustainability issues.


Teacher education has a critical role to play as people around the world strive to reach the Sustainable Development goals. Education for sustainability (EfS) aims to motivate and prepare educators to create a more sustainable future through education. The purpose of this case study was to explore pre-service teachers' changes in their values, sense of agency, consumption practices and motivation after participation in a required EfS course. Students were enrolled in a hybrid course that conveyed content through digital stories followed by reflections, in-class discussions and activities. Ninety-one undergraduate students completed pre- and post-course surveys. Students reported significant changes in their beliefs about the relevance of sustainability education, attitudes toward sustainable development, self-efficacy, locus of control and sustainable consumption practices. Qualitative analysis of open-ended question served to triangulate quantitative findings. Results support the need and potential for EfS courses for educators, particularly in the United States where such courses are not typically required or even offered at most universities.


Since the Sustainable Development Goals (SDGs) came into effect, both UNESCO and other international organisations recommend empowering youth to implement the SDGs in universities. Getting started with the SDGs at university level is of special relevance in pre-service teacher training since future teachers are powerful agents of change in the lives of young people. Future teachers need to acquire competencies in sustainability to be able to promote meaningful changes in sustainable behaviour. To that end, holistic approaches to facilitate their acquisition need to be developed. The aim of this study is to explore which teaching methodologies are suitable for the development of competencies in sustainability and research in Higher Education (HE). The participants taking part in the study are students in pre-service teacher training. The experimental educational model used for the development of competencies in sustainability and research consists of a methodological sequence of Project-Oriented Learning (POL) and a Cross-disciplinary Workshop on Sustainable Food. This study provides evidence that POL is an excellent methodology for developing competencies in sustainability and facilitates the relationship between sustainability and research competencies.

Education for sustainable development has been addressed by professionals, authorities, and a number of research studies in the last decades, and yet the results are not clearly visible. Teachers as agents of a new mindset do not seem to understand the ways of approaching raising awareness of the issues of global challenges. This study investigated the possibility of raising the extent of applying critical thinking to the problem-solving issues of a group of student teachers in their initial training. The sample consisted of 48 student teachers. Both qualitative and quantitative methods were used: namely, a questionnaire, content analysis, and focus group interviews. An archive of the students’ materials was also used for content analysis. In the data analysis, inter-rater reliability, as well as parametric (t-test) and non-parametric tests (Mann-Whitney U test) were applied. The results of the study provide evidence of the positive impact of the use of case studies in teaching pre-service teachers on the development of their critical thinking skills. It can be concluded that it should not be taken for granted that teachers automatically know how to develop the competencies that are necessary for sustainable development (SD). Instead, teacher education institutions need to incorporate thorough training that focusses on education for sustainable development (ESD) into the entire teacher programme in order to make sure that the teachers leave their initial training well prepared for guaranteeing Sustainable Development Goals (SDGs).


The UN Sustainable Development Goals (SDGs) present a global agenda addressing social, economic, and environmental challenges in a holistic approach. Universities can contribute to the implementation of the SDGs by providing know-how and best-practice examples to support implementation and by integrating issues of sustainability into their operations, research, education, and science-society interactions. In most of the signatory countries of the Agenda 2030, an overview of the extent to which universities have already addressed the SDGs in research is not available. Using the example of universities in Austria, this study presents a tool to map research that addresses sustainability topics as defined by the SDGs. The results of an analysis of scientific projects and publications show current focus areas of SDG related research. Research on SDG 3 (Good Health and Well-Being) and SDG 4 (Quality Education) is well represented by universities in Austria, while other SDGs, such as SDG 1 (No Poverty) or SDG 14 (Life Below Water), are under-represented research fields. We anticipate the results will support universities in identifying the thematic orientation of their research in the framework of the SDGs. This information can facilitate inter-university cooperation to address the challenge of implementing the SDGs.


In the last decade, a growing number of technical universities and engineering faculties have been promoting various initiatives aimed at integrating sustainable development in their activities. Despite the fact that the commitment of the academic staff has been widely recognised to have a key role in university change processes towards sustainable development, few studies have specifically analysed the characteristics of academics engaged in such processes. The present study provides an analysis and a profile of a group of academics, participating in a training programme on sustainable human development, granted by a European fund. The methods employed include a semi-structured survey, focusing on the academic activities and social outreach of the participants, complemented by a bibliometric analysis of their scientific production. The findings show: 1) an interdisciplinary profile of the academics, 2) an integration of sustainable development principles in all academic activities and 3) a promotion of those principles outside the university. It is emphasised that the commitment of this type of academics can facilitate a cultural change in engineering education, as well as more holistic transformations of universities towards sustainable development. The paper concludes by providing recommendations for leaders and policy makers of higher education institutions on the implementation of appropriate policies and mechanisms to facilitate faculty engagement in sustainable development.

Planning in sustainable development is believed to be an important element in allowing higher education institutions to set their goals and to commit themselves towards undertaking concrete actions and measures at all levels in order to implement sustainability. Yet, there is a paucity of research that has looked at the extent to which planning can support institutions of higher education to assess their performances and to determine whether the set aims have been met. This research gap needs to be met to allow a better understanding of how planning can help to promote the integration of the three components of sustainable development – economic development, social development and environmental protection in higher education. This paper explores the challenges for planning the sustainable development in higher education, also outlining the potentials lessons learned that could assist in improving Education for Sustainable Development efforts in Higher Education Institutions. Among its main results are the fact that many universities wish to pursue sustainable development, but their efforts are hindered by lack of institutional support and planning and limited emphasis on approaches, such as problem-based learning. The universities that are engaged in the field have to face many problems, varying from limited resources to lack of trained staff. As a result, integrated approaches to sustainability become difficult to implement. Finally, the paper has identified the fact that many opportunities offered mainstream developments, such as the UN Declaration The World we Want’ or the UN Sustainable Development Goals are not being put to full use.


Purpose The purpose of this case study is to explore the principles and practices of sustainable development (SD) in the university curriculum.

Design/methodology/approach To explore the principles linked with the sustainable development goals (SDGs) and the learning and teaching practices in sustainability at the International University of Catalonia (Universitat Internacional de Catalunya, UIC, in Catalan), an empirical study was carried out by using a mixed methodology for data collection. Indicators related to SDGs found in the University curriculum (quantitative analysis) were measured using Excel, combined with in-depth semi-structured interviews to the deans of different faculties (qualitative study), which were analysed using Atlas.ti.

Findings Several visions, difficulties and challenges were identified in this mixed-method study around the concept of sustainability, which allowed the authors to describe and portray a specific starting position in relation to the SDGs at the UIC.

Research limitations/implications The presence of dimensions linked to the SDGs in the University curriculum were analysed by means of a quantitative study. However, global competences related to education for sustainable development were not studied.


Agenda 2030 for sustainable development focuses attention on lifelong learning opportunities for all. The new targets expand on their predecessors, the Millennial Development Goals, by both widening and deepening the scope of system-wide quality education systems. Whilst the Millennial Development Goals focused attention on universal primary attainment, the Sustainable Development Goals introduce tertiary education into the global development agenda. Higher education was an important consideration in the 2000 Dakar framework, but it was not included as a target. Instead, it appeared indirectly as a supportive pathway to other goals such as youth skills or quality teacher. Now, higher education plays a key role as a means to achieving Goal 4 on education: inclusive, equitable and quality education for all. This article evaluates the introduction of higher education into the development agenda and the introduction of the SDGs into the parallel but fragmented multilateral and university agendas. It concludes by specifying two factors that are essential if higher education is to play a revitalised role in the sustainable development framework: publicly-funded research and regional higher education partnerships.
Sustainable development is acquiring high attendance in higher education. In fact, one of the targets for the Sustainable Development Goals announced by the United Nations in September 2015 aims to ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, thorough education on sustainable development. The current study focuses on the evaluation of individual works based on the sustainable development suggested to students in a subject of the Master’s of Thermal Engineering at the University of Vigo. In addition, a sustainable holistic rubric is presented, which was used to analyze the ability of the students to incorporate sustainability principles in their work. The rubric was based on the 17 Sustainable Development Goals and the associated targets of the United Nations, more specifically on the Goals 7, 8, 12, and 13. A total of 10 works were evaluated. As a general conclusion, it was found that the students generally do not consider or consider to a lower extent the economic criteria opposite to the environmental, technical, and social dimensions. The environmental sub-criterion were applied to a greater extent in the development of the works. However, the technical and social dimensions were included to a greater or lesser extent depending on the type of work developed.


Globally, societies face enormous social, economic and environmental challenges, such as scarcity of resources, demographic developments, climate change, inequality, etc. The degree of success in coping with these complex issues and fostering sustainable development depends largely on educational standards in society. This paper aims at investigating the relationship between sustainable development goals (SDGs) and education in business schools. Therefore, a case study of a business school in Germany is analysed based on its educational activities (curricula, co-curricula and outside university) in the field of sustainable management education. The methods employed for the analysis are action research and keyword search. The contribution of this work is firstly to outline the implementation practice of sustainable management education in a business school and secondly to propose a conceptual model of how business schools can contribute to SDGs. The findings offer valuable insights for other business schools into how to integrate sustainability into their management education. On the policy level the proposed influence of business schools on SDGs is beneficial for educational institutions such as PRME.


Although higher education plays a key role in the societies focused on achieving the United Nations' Sustainable Development Goals in 2015, a lack of common frameworks has been detected on the competences to be integrated in university degrees (Segalas, Ferrer-Balas, Svansrom, Lundqvist, Mulder, 2009), on the need for a more practical and integrative learning, for permanent teacher upgrading and organizational leadership for an effective accomplishment of Education for Sustainable Development (Van Weenen, 2010). This article studies and proposes to identify the learning needs in the professional profile of the Degree of Social Education at the Complutense University of Madrid, based on the dimension of sustainable development.

The research methodology used has been qualitative, using instruments such as semi-structured interviews and focus groups with specialists from different fields: third sector and civil society; managers of higher education and members of the university community. The results show the need to rethink education from the perspective of sustainability. Incorporating into the profile of the social educator dimensions such as anthropo-ethics in the formative processes, values such as respect and care of the community of life, ecological integrity, social justice, sustainable economy; and, reinforce values such as democracy, participation and culture of peace. It concludes with the need to take into account in the teaching learning process a fourth competent dimension: learning to live together.


During 2015, there have been significant developments in the promotion of Sustainable Development at international level, such as the statement of the Sustainable Development Goals (SDG), the United Nations
Conference on Climate Change COP 21 and the publication of Pope Francis's encyclical Laudato si, addressed to all people of good will, on integral ecology and urging an ecological conversation.

In the 25 years following the Talloires Declaration until now, changes have been made within many universities, including the implementation and promotion of sustainability, especially in economic and environmental dimension. However, the integration of these changes has made less progress in the social integration dimension. There are still many challenges within university curriculum and their members to make sustainable development a reality in higher education. Intends to introduce the necessary changes so that sustainability is implemented within all grade levels, and especially within the mission of the university as an example of environmental sustainability.

Based on interviews with members of the university community and with the participatory process of the strategic sustainability integral plan led in our University, possible barriers were analysed in higher education, that prevent the implementation of such change period, some proposals were suggested to overcome and enhance sustainability at the University.


Universities play an essential role in spreading climate change awareness. However, slight information on climate change and environmental issues had been integrated into the curricula. Moreover, minimal research had been carried out to understand university role in spreading awareness, and students level of awareness and daily behaviour towards climate change, especially in developing countries. This paper aims to investigate the aforementioned issues. An experimental study was carried out on 448 undergraduate students enrolled at An-Najah National University Palestine. The study aimed to examine students’ knowledge and daily behaviour towards climate change, and the important role the university and students' societies play in terms of spreading and enhancing awareness. The results revealed that female and male students had a non satisfactory interest level in environmental topics and activities, and gender equality did not seem to be an issue. Moreover, female students tend to have a significantly lower level of awareness on climate change compared to male students. On the other hand, being an engineering students or a member in students’ societies had a positive impact on students’ level of awareness and especially females. The results revealed that female students who are enrolled in the engineering faculty or members of students’ societies had a significantly higher level of awareness compared to female students who are enrolled in other faculties or not members of students’ societies. In general, students had a low level of awareness regardless of gender or faculty and universities should offer undergraduate students and especially female students’ opportunities to learn more about climate change by integrating climate change topics into higher education. Moreover, universities should support extracurricular activities held by student societies, and some of these activities should be directed towards environmental and climate change issues. This study entails the activities of the Mediterranean Gender Equality Community of Practice co-created by the Mediterranean Network of Engineering Schools (RMEI), where An-Najah University is an active member, with the support of the EU TARGET project entitled 'Taking a reflexive approach to gender equality at Institutional transformation'.


The United Nations Sustainable Development Goals Agenda includes gender equality as one of its 17 goals and emphasizes the importance of supporting women’s empowerment to meet the SDGs. Gender-responsive budgeting (GRB) can help achieve gender equality in organizations, but there continue to be limitations on exploiting its full potential. Further research is needed, especially in the public sector and at higher education institutions. This paper investigates the development of the GRB process and the related reporting practices, as well as the potential to fully integrate it into the university’s strategic policies at the University of Ferrara. The paper is based on a qualitative content analysis of annual GRB reports from 2011 to 2018. The results show that, during this period, GRB at the university changed from playing an accountability role to having a performance measurement role. Although GRB has become more relevant inside the organization, the extent of the integration with the university strategy and the budgeting cycle remains limited, which hampers the strategic relevance of GRB.

The unanticipated transition from traditional/on-campus to distance learning has not only posed challenges in different contexts at the global level, but it also caused disparity in terms of access to education. As a mandate, Goal 4 of Sustainable Development Goals states that by 2030 all member states should work to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UNESCO, 2015). In practice, however, the responses of different international education institutions during the Covid-19 confinement indicate that the achievement of this equity plan at the global level is rather unfeasible. To address this issue from a local lens, this study seeks to examine the plan implemented for online teaching in the Algerian higher education institutions. It draws on a key body of literature on online infrastructure and pedagogy to explore (1) the different online teaching models that were implemented, (2) Algerian higher education teachers' practices within the framework of this new model of teaching, and (3) the different challenges encountered by teachers during this transition. To achieve this end, a qualitative study that is based on an analysis of teachers' interviews is conducted to explore teachers' practices in different higher education institutions in Algeria. The results of this research will not only highlight the prevailing disparities, but will also serve to offer recommendations that could be relevant to future teachers' professional development programs.


Higher education must include training in sustainability to make all actors aware of the serious problems our planet is facing. Mathematics plays an important role in the achievement of the Sustainable Development Goals (SDG) and at the same time these allow working with real situations in the subject of mathematics, providing the student with active learning. Sustainability is used to make the student see the usefulness of mathematics while instilling values and attitudes towards it. A set of problems have been raised during the academic year that are solved with the developed mathematical techniques, and through a survey, the students’ perceptions about the usefulness of mathematics to reach the goals established in the SDG has been evaluated. The results show that, regardless of the student’s gender, the student’s assessment of the usefulness of this subject in solving real problems improved. It has been observed that this teaching methodology has helped to motivate students and even those who do not like this subject have improved their appreciation of it.


In this rapidly changing world, universities have an increased responsibility to prepare professionals for a sustainable future, and teacher education is not an exception to this. In this study, we observed a group of preservice teachers engaging in a statistical investigation project. Specifically, we examined their degree of statistical knowledge; how effective the project was in enhancing their statistical knowledge and thinking; and how they participated in the project to make and share data-driven decisions. To this end, both qualitative and quantitative investigations were used. With the help of pre-and posttests, we found that the degree of knowledge differed between self-perceived and measured knowledge. Moreover, the results demonstrated the project’s effectiveness in enhancing the participating teachers’ statistical knowledge and thinking, specifically estimating the population mean and its interpretation. In making and sharing their decisions, the participating teachers applied multiple key competencies, crucial for promoting sustainability. Thus, the statistical investigation project was effective for enhancing preservice teachers’ statistical knowledge, thinking skills, and ability to promote sustainability.


This paper aims to open the discussion on the incorporation of sustainable development goals (SDG) in the curricular plans of engineering programs. The United Nation has recognized the development SDG by 2030 as a
priority. It should be evident that universities embrace these objectives to align with the great challenges facing education today. This is an initial discussion where it is intended to offer some research and challenge ideas to the administrators and policymakers of the universities regarding the incorporation of these objectives. As an example, some academic and research activities that are carried out in our institution to overcome these challenges are described. A logic framework to incorporate SDG in engineering education is presented and some examples of academic projects that somehow touch the SDG are mentioned and finally some recommendations of how these SDG can be explicitly incorporated into the engineering education programs and in general in the high-education institutes.


Within the framework of sustainable development, Environmental management poses a challenge for all Higher Education Institutions (HEI). Although the 2030 Agenda is a global action framework, it becomes a challenge for the HEIs to transfer it to their local context through research. To simplify this task, a methodological proposal is put forward to evaluate the academic capacities of the HEIs against the SDG. The methodology was developed in 5 phases and applied at the Pontificia Universidad Javeriana (PUJ) to SDG 3 Health and Wellbeing and its 13 sub-goals. A total of 1,694 research projects and theses, mainly from the School of Economic and Administrative Sciences and the School of Nursing. This methodological proposal constitutes an important contribution to the SDG and can also be replicated by other HEIs that wish to adopt it and contribute to the implementation of 2030 Agenda through research.


Teaching methods for calculation and project development, focusing on theoretical principles and the reproduction of validated procedures, has been the traditional focus of engineering education. Innovation has been present in universities, mainly in the creation of processes and technologies for the development of products, services, or companies, based on entrepreneurship. Training in innovation has been limited to interested students, and not encouraged for all students, despite how relevant it is for current and future global development. According to the literature research and the opinion of the experts, this research identifies the characteristics of innovation that engineering students should acquire, in response to the challenges of engineering in the 21st century, considering as a basis the Sustainable Development Goals (SDGs), in the context of the increasingly demanding requirements of industry 4.0. The identification of the relevant aspects in innovation were categorized according to the expertise and academic performance of the authors. In addition to this, the investigation of the representative elements of Industry 4.0, and the incorporation of Sustainable Development Goals, establish the basis of this study to guide the development of innovation skills in the process of engineering student education. Furthermore, in order to integrate innovation skills, elements of Industry 4.0 and aspects of Sustainable Development Goals, the concept of competence is introduced, with a conceptual structure that considers knowledge, attitude and performance context, thus this research provides a conceptual framework for those interested in constructing innovation skills in engineering, oriented towards the development of an innovation culture and mentality, as part of the expected professional performance.


The university is a key agent in the process of transformation towards sustainability within the framework of the 2030 Agenda. This study aims to analyze the usefulness of the collaborative learning methodology through a serious game (SG) in the university environment to increase the level of knowledge and the importance given to the Sustainable Development Goals (SDGs) by students. Through ex ante and ex post questionnaires, the degree of variation in the knowledge acquired and importance given to the SDGs was measured. To compare the midrange of these two samples and determine whether differences existed, we applied the Student and Wilcoxon t-tests. The results indicate that the methodology used produced an improvement in knowledge about the SDGs. Therefore, it is concluded that the university should promote this type of workshop and SG activities to contribute
to the achievement of the SDGs, both in the Bachelor's Degree in Primary Education and in degrees of other disciplines. Moreover, we have encouraged active learning of the SDGs through collaborative workshops using the design thinking method and an SG called "The Island", which, based on certain economic, social and environmental information, puts students in a position to govern resources to meet the needs of its population.


Successfully coping with complex, real-world challenges, such as those related to sustainable development and the resilience of coupled human-environment systems, calls increasingly for adapted forms of education and extended competences. Hence, we argue that, beyond knowledge and expertise in professional domains, additionally, personal, systemic, creative, and sociocultural competences are required to meet such challenges. Hereby, institutions of higher and continuing education play a crucial role. In this paper, universities as institutions of higher education are critically considered in relation to delivering education for sustainable development by raising awareness and providing the necessary competences to cope with complex problems such as sustainable development through effective forms of higher and continuing education as well as training. Research on attitudes and perceptions regarding sustainable development and the perceived need for comprehensive competences required to deal with such complex problems is still lacking. Our study provides a first attempt to elucidate core aspects of these attitudes, perceptions, and competences aiming to contribute to future, more tailored education approaches. We discuss the outcomes of a survey on sustainability in teaching and learning conducted at four Austrian universities. The analyzed sample comprised 3200 students as the recipients of, and 498 lecturers as the providers of, sustainability education in various academic disciplines at four distinct Austrian universities. Applying a questionnaire-based investigation of self-reported sustainability-related perceptions, attitudes, and competences and conducting factor analysis and cluster analysis, five sustainability types were identified that revealed a type of specific core awareness of sustainability and the perception of required competences related to sustainable development. The results presented are positioned to build a basis for further investigation that goes beyond the self-reported assessments to enable a comparison with sustainability-related, real-world problem-solving performance.


Purpose: The purpose of this case study is to focus on the role of higher education in the realisation of Sustainable Development Goal (SDG) 4, discussing both challenges and opportunities. Drawing on the example of The University of the West Indies (UWI) School of Education (SOE) (Mona Campus in Jamaica), this paper illustrates how higher education can move SDG 4 forward in a realistic and significant way. Design/methodology/approach: Drawing on the literature and case study experiences implementing education for sustainable development-related activities within a SOE, opportunities and challenges regarding SDG 4 and higher education institutions (HEIs) are identified and outlined. The SOE at the UWI campus is used as an illustrative case study to highlight the ways in which HEIs can drive SDG 4 through teaching, programme and course development, research and outreach activities. Findings: Based on the literature examined, along with the case study, the paper argues that HEIs must help to shape and lead the SDG 4 agenda by being integrally involved and no longer watching from the side lines. A framework to aid HEIs in achieving outcomes associated with SDG 4 is then proffered. The intent is that this will not only help shape discourse but also shape actions, as the demand for higher education increases across the globe. Originality/value: This paper uses a Caribbean regional HEI as the basis for the framework proposed to aid HEIs in achieving SDG 4 outcomes. This brings to the fore discourse from the global south, as space that is often missing from the discussion.


Challenge-Based Learning (CBL) is an innovative teaching methodology that engages students to resolve real-world challenges while applying the knowledge they acquired during their professional training. This article describes the results of the implementation of an online course on entrepreneurship that utilized CBL with a group of 20 undergraduate students from various disciplines in a university in Mexico. During the course, challenges related to the Sustainable Development Goals of the United Nations were presented to the
participants, making it possible to observe the students’ interest in resolving these problems. This research uses a case study methodology and seeks to determine the CBL elements in the e-learning modality. The results showed that the participants generated sustainable business ideas aimed to resolve local, national, and global problems. The recommendations are to continue the formation of the businesses proposed in the project. These ideas can become real ventures that connect various actors in the entrepreneurial ecosystem and will continue to strengthen transversal skills such as teamwork and communication.


Higher education is incorporating Information and Communication Technology (ICT) at a fast rate for different purposes. Scientific papers include within the concept of Technology Enhanced Learning (TEL) the myriad applications of information and communication technology, e-resources, and pedagogical approaches to the development of education. TEL’s specific application to higher education is especially relevant for countries under rapid development for providing quick and sustainable access to quality education (UN sustainable development goal 4). This paper presents the research results of an online pedagogical experience in collaborative academic research for analyzing good practice in TEL-supported higher education development. The results are obtained through a pilot implementation providing curated data on TEL competency’s development of faculty skills and analysis of developing sustainable higher education degrees through TEL cooperation, for capacity building. Given the increased volume and complexity of the knowledge to be delivered, and the exponential growth of the need for skilled workers in emerging economies, online training is the most effective way of delivering a sustainable higher education. The results of the PETRA Erasmus+ capacity-building project provides evidence of a successful implementation of a TEL-supported methodology for collaborative faculty development focused on future online degrees built collaboratively and applied locally.


The Manuela Beltrán University, located in Cajicá, Colombia, is a national example for academic accessibility support, and its virtual modality in educational programs offer support in sustainable development goals (SDGs) under the parameters of UNESCO. This document is a description of its virtual unity trained in the design, creation, administration, and advisement of virtual programs, in new technologies, in this case of the software engineering program. The investigation is done under multimethod and mixed methods research case study descriptive methodology. To define the phenomenon and the real-life context reviewing the framework and national conception of ‘software engineering’ within the context of quality education in Colombia, justification of teaching-learning processes of software engineering, need of the program under the virtual modality at the national level, and achievements of the Virtual Software Engineering Program of the UMB.


The Bologna Process and the European Higher Education area require the application of new active methodologies in the classroom that place the student at the center of his or her learning process. In the present work, we analyze the application of a Service-Learning (SL) methodology in the context of a Final Degree Dissertation (FDD) in the degree in Environmental Sciences at the University of Extremadura (Spain). The project deals with an isolated Kichwa community in Ecuador and involves the development of alternative science education materials for the capacitation of in-service science teachers. This paper evaluates how an FDD carried out according to Service-Learning (SL) principles can help in the acquisition of so-called "soft skills" and how these can be focused in the promotion of the sustainable development goal (SDG) knowledge and achievement. To this end, a qualitative study of the experience and a deep evaluation, followed by a final reflection, were carried out. According to the preliminary results, we can conclude that Higher Education should include SDGs in its teaching praxis and could do this successfully using the SL methodology.
Higher education institutions are important stakeholders in helping to advance the United Nations Sustainable Development Goals (SDGs). Recognizing this, in 2016 the Yale Office of Sustainability launched a project in which a multidisciplinary team of students reviewed the publicly available information of Yale University’s more than 4,400 faculty and researchers to determine linkages to the SDGs. Completed over the course of two years, this effort produced a matrix with over 100,000 data points that is being used to support interdisciplinary collaborations at the university. Building on this work and Yale’s commitment to ambitious national and international collaborations on sustainability research, teaching, and practice, in 2018 Yale led a half-day program on behalf of the International Alliance of Research Universities (IARU) during the conference of the International Sustainable Campus Network (ISCN) aimed at exploring pathways for higher education institutions to engage with the SDGs. This article details the SDG academic review project and key components and conclusions of the IARU event.


The education sector is one of the few sectors that can support, promote, and contribute to achieving all of the 17 United Nations’ Sustainable Development Goals (UN SDGs). Universities, in particular, are essential to achieving the SDGs because they can equip the next generation with the skills, knowledge, and understanding to address sustainability challenges and opportunities and perform research that advances the sustainable development agenda. Universities can also provide examples and use their expertise, capabilities, and leadership to influence stakeholders to adopt and model more sustainable practices. To be effective, however, universities should be fully committed to support and implement the 2030 Agenda for Sustainable Development. The SDGs are an important vehicle for creating positive impact by embedding sustainability into university business strategies, decision-making processes, and practices, and for improving their accountability to stakeholders. This article aims to contribute to research and practice fostering discussions and sharing the experience of the Royal Melbourne Institute of Technology (RMIT) University in Melbourne, Australia, in undertaking an ambitious and innovative project to raise awareness, foster collaboration, measure impact, and communicate the university’s contributions toward achieving the SDGs across the entire university.


Purpose: This study has two aims. It aims to analyse three essential pre-conditions of an authentic sustainability curriculum (ASC). The theoretical analysis involves the definition of authenticity through the learning outcomes (LOs) framework called authentic minimum (AM). This paper also aims to gauge students’ views on economic growth, sustainability and mindfulness. Design/methodology/approach: The theoretical aim was accomplished by extensive study of and critical reflections on the relevant literature. The empirical research was qualitative using an online questionnaire as survey instrument consisting of predominantly open-ended questions involving students of two economic faculties. Directed content analysis and nonparametric quantitative methods were used to assess the answers. Findings: Viable sustainability goals are in stark contrast with the promotion of sustainable economic growth in sustainable development goals 8 and the reigning neoliberal agenda. The empirical findings provide valuable insights into how undergraduate students view mindfulness, economic growth and aspects of sustainability. Research limitations/implications: The empirical research has some obvious limitations that warrant caution in generalizing the results. The authors used a sample of convenience and the base population of the survey consisted only in students of economics in two economic faculties of two Hungarian universities. Practical implications: Practical implications of the present paper are many all sharing; however, the need for existential courage on the part of teachers, students and leaders of higher education institutions. Existential courage is required for profound personal transformation, for going against mainstream ideology and the possible confrontations with colleagues, leaders of institutions, students, friends or family members. Originality/value: On the theoretical side, the concept of ASC was introduced with AM as its LOs framework. For the first time, an attempt was made to interpret authenticity in sustainability education as an integration of mindfulness, human and environmental ethics and a firm opposition to economic growth and neoliberal ideals.
The analysis of qualitative data supported earlier research and also provided unique findings in the examined areas.


The research presented in this paper is based on an exploratory study on the views of a group of students of the Master in education about sustainability, world problems and the relationship with sustainable development goals (SDG). Sixty-eight students from three Master's in Education from eight Spanish universities took part by means of a questionnaire. It is concluded that the improvement of postgraduate training programs is necessary in order to overcome the duality sustainability-conservation of nature, the treatment of the concept of sustainability from a multidimensional character and the deepening of the work around socioenvironmental problems in relation to the ODS.


The study aims to review the literature that analyses the history and current situation of Higher Education (HE), henceforth known as HE, in Turkey and to review HE agenda of the Government of Turkey in order to identify the extent to which it has responded to the sustainable development agenda. This paper recommends ways to improve and develop HE in Turkey so as to make it a significant sector which prepares its stakeholders to achieve sustainable development goals (SDGs). Multiple sources of information: documents on the agenda of Turkey with regard to the objectives of HE; the findings of previous studies undertaken on different aspects of Turkish HE system; and documents prepared by organizations such as YÖK (Turkish Higher Education Council), MEB (Turkish Ministry of National Education) and the World Bank. The analysis of relevant literature suggests that Turkey aims to upgrade the HE system in line with its goals of becoming a more powerful player in the world. The initiatives to enhance enrolment of students at HE institutions; strengthen HE Education Curriculum, internationalise the Turkish HE are in line with the directions that support the attainment of SDGs. The findings provide an account of the HE system in Turkey, both strengths and weaknesses. It enhances understanding on the current situation of HE in Turkey vis a vis the Sustainable Development Goals. The study does not only describe the Turkish HE system, but it provides a case which can be used by HE researchers to study HE in different contexts.


Engineering education has the potential to raise engineers who are not only professional engineers but strategic developers who work towards sustainable development. Since the United Nations instituted Sustainable Development Goals nations like Cameroon has been keying into it by reason of being signatories to ensure that such goals are achieved in their nation. While the strive for sustainable development continues, this paper argues that engineering education can be used to drive sustainable development. By ensuring the appropriate training of engineers and the increase in the number of engineers Cameroon can hasten its path to sustainable development. Engineering education is built at the key to sustainable development since it will not only train engineers who are ethical but also professionals who would ensure that vision 2035 is achieved.


As reflected in the sustainable development goals (SDGs), sustainable development is a multi-dimensional concept integrating political, ethical, economic, and other factors. Reports from the United Nations (UN) Decade of Education for Sustainable Development (UNDES) suggest that universities are more engaged with sustainable development in higher education. Despite promising signals about student awareness of sustainable development, survey studies suggest student engagement and knowledge is limited. Previous studies have tended to focus on undergraduates and examine basic attitudes to triple bottom line issues. This study examined knowledge and attitudes of postgraduate U.K. students enrolled in one-year taught sustainability degrees on the multi-dimensional issues of sustainable development. This study piloted a 39-question 7-point Likert scale survey with a cohort of U.K.-taught postgraduate (MSc, MPhil) students (n = 121, Cronbach's Alpha 0.796, n = 39 questions). The study found this cohort able to recognize and respond to the multiple challenges of strong and weak sustainable development issues rather than exhibiting knowledge gaps previously reported. Results and
PAR-based UREs are undergraduate research experiences (UREs)-built into university-community partnerships—
that apply principles of participatory action research (PAR) towards addressing community-defined challenges. In this paper, we advance PAR-based UREs as an action-oriented framework through which higher education institutions can simultaneously enact and advance the United Nations sustainable development agenda, while cultivating student development. We draw upon interdisciplinary scholarship on sustainable development and PAR, as well as empirical findings from a pilot program, to accomplish dual goals. First, through the lens of six Sustainable Development Goal (SDG) clusters, we explore the synergies between undergraduate PAR engagement and sustainable development, explaining how PAR-based UREs can prefigure and facilitate SDG achievement by promoting cross-sector collaboration and supporting diverse stakeholder engagement through community-driven research and action. Second, within each SDG cluster, we offer complementary reflections and recommendations around the design and implementation of PAR-based UREs towards advancing students’ skills and abilities as: (1) Community Collaborators (and Learners); (2) Community-Engaged Researchers; (3) (Interdisciplinary) Scholars; (4) Agents of Change; (5) (Sustainable) Co-Innovators; and (6) Institutional Representatives. Finally, we discuss the critical role of higher education institutions in minimizing structural barriers to PAR-based URE implementation, given their prefigurative and practical potential for both SDG achievement and student development.


In this paper, we argue that it is opportune to revisit profound questions about the purpose, nature and value of higher education in society at a juncture where the context of higher education has been significantly influenced by the global sustainability agenda and responsible management education imperatives (United Nations (UN) Principles of Responsible Management Education (PRME), UN Sustainable Development Goals (SDGs), UN Global Compact, UN Decade of Education for Sustainable Development (ESD), etc.). We take Holman’s (2000) work on models for management education and his recommendations as our point of departure in critically examining the practice of embedding ESD and UN PRME (as two complementary schemes) in our institution. We explore the nature and interrelationships of Holman’s 5 axioms of management education (epistemic, pedagogical, management-as-practice, social, and organisational) in order to provide a reflective account of our experiences and elucidate deeper understandings of what responsible education for sustainable development may mean in practice. The arguments presented here are grounded in both practical theorising stemming from related literature and concrete empirical illustrations generated through our observations and reflections as participants (in our roles as PRME Leader, ESD champion and SD programme leader) in the PRME/ESD initiatives. We have demonstrated that embedding ESD responsibly across a HE institution is a complex, emerging, evolving and non-linear process of addressing simultaneously the curriculum content, power, structures, identity, values, and external checks and balances. Therefore, a critical attention is needed to all 5 axioms and assumptions that are at play and has to be facilitated by a combination of educational activism, informal academic collaboration, formal measures and reporting, and practical skills of maintaining legitimacy and ownership of creative and innovative pedagogic models while negotiating the meaning of those to align with the institutional priorities.


Higher Education (HE) is experiencing disruption from technologies, demographics, the globalising world and longer life expectancy. Historically Higher Education has had a legacy of being seen as the requirement for an educated ‘elite’, there has been a policy ambition set in various countries (including the UK) for it to become the expectation for much wider segments of the population as a whole. As students become ‘everyone’ and learning becomes ‘all the time’ Distance Teaching and Research Institutions have a tremendous opportunity but there are
also many disruptions and barriers to overcome. Higher Education institutions have an important role within Education for Sustainable Development and sustainable lifestyles; one of the important goals and targets of the United Nations Sustainable Development goals for 2030. Higher Education can contribute to sustainability in many ways—social, technical and environmental; globally and locally. In particular distance-learning universities due to the flexibility in the learning process, use of technologies, and inter-disciplinary approach to teaching and learning, constitute key factors in education for sustainable development. But what will this contribution look like? In this paper, the responses from senior leaders in four major European distance-learning universities are presented, compared and discussed. The tentative conclusions draw out some strategic imperatives for sustainable higher education in the twenty-first century.


The main purpose of this work is to present how the complex process of sustainability course in higher education can provide a useful framework in order to create an experiential learning environment for sustainable development. During an academic semester, the technique of role-playing exploited to the teacher to bring three groups of cyclically alternating players/students of higher education in order to understand better the deeper concept of sustainable development goals. The proposed methodology increases the understanding of the theme that is beyond the trainee’s direct experience. However, the ability of the groups breeds a positive stimulus for experiential learning. The value of prior knowledge and personal involvement that are discussed are of great significance. Finally, this work contributes on how sustainability can be designed through role playing in higher education.