LAURA CORAZZA

SUSTAINABILITY EDUCATION FOR FUTURE MANAGERS

An autoethnographic research experience on transformational learning

G. Giappichelli Editore

15

Procedura per l'approvazione dei volumi in Collana e referaggio.

La pubblicazione di una monografia nella Collana è subordinata al verificarsi di due circostanze:

a) accettazione della proposta editoriale presentata dall'autore/i secondo il formato definitivo dalla collana;

b) ottenimento di un giudizio positivo sul volume da parte di due revisori anonimi.

La proposta editoriale segue questo iter:

– la proposta viene inviata all'Editor in Chief attraverso la casella di posta elettronica csr.ba.management@unito.it (con richiesta di ricevuta) nel format previsto per la collana dall'Editore;

– valutazione da parte dell'Editor della proposta/manoscritto il quale decide del rigetto o dell'invio al referaggio; nel processo di valutazione si può avvalere del supporto del Comitato Scientifico;

– le proposte che ottengono un giudizio positivo sono senz'altro accettate;

– le proposte che ottengono un giudizio non pienamente positivo sono rivalutate dall'Editor avvalendosi del Comitato Scientifico per formulare il giudizio definitivo.

All'accettazione della proposta editoriale segue il referaggio del volume.

Il referaggio è condotto da due revisori (referee). Questi possono essere scelti nell'ambito del Comitato Scientifico, ma anche al di fuori di esso, fra accademici che possiedano competenze adeguate sui temi trattati nella monografia inseriti nell'elenco dei referee.

I revisori sono scelti dall'Editor. I revisori non devono conoscere il nome dell'autore del volume oggetto di valutazione. L'Editor contatta i revisori individuati e invia loro, attraverso la casa editrice, il volume debitamente reso anonimo.

I revisori formulano il loro giudizio entro due mesi dal ricevimento del volume. Il giudizio è articolato secondo i punti contenuti in una scheda di referaggio appositamente redatta.

Il giudizio viene inviato all'Editor. Se, per entrambi i revisori, il giudizio è positivo e senza suggerimenti di revisione, il volume viene passato direttamente alla stampa. Se uno o entrambi i revisori propongono correzioni, l'Editor, inoltra i suggerimenti all'autore perché riveda il suo lavoro. Il lavoro corretto viene nuovamente inviato all'Editor che lo sottopone a una seconda revisione da svolgersi entro il termine massimo di un mese. In caso di giudizi contrastanti, l'Editor decide se acquisire un terzo parere, stampare comunque il volume o rifiutarlo.

LAURA CORAZZA

SUSTAINABILITY EDUCATION FOR FUTURE MANAGERS

An autoethnographic research experience on transformational learning

Editor in Chief
Prof. Piero Pisoni

Comitato Scientifico
Prof. Marco Allegrini (Università di Pisa)
Prof. Paolo Pietro Biancone (Università di Torino)
Prof. Paolo Ricci (Università Sannio di Benevento)
Prof. Pier Luigi Marchini (Università di Parma)
Prof.ssa Katia Corsi (Università di Sassari)

Table of Contents

Introduction

Only in the last years, people have acquired a higher level of awareness about the fact that the World, as we know today has been and will be inevitably changed by human operations. What for years has been judged by many as a niche research field, something for hippies or naive educators, sustainability science is now reputed to be an imperative for all the traditional area of research. Education, indeed, is called today to play a fundamental role, to shape future citizens mindset towards the responsibility of everyone for the state of the health of our planet.

The role of universities for sustainable development is essential to guarantee that the call to the army will be compelling despite the volatile, uncertain, complex, and ambiguous scenarios we are all living. In 2018, the OECD released its strategic overview for the future of education, namely the Learning Framework 2030. In that document, the OECD and a hundred of international experts declared a shared vision of education able to help every learner to become a whole person that can potentially help other individuals, communities and the Planet in coping with future environmental, economic and societal challenges. Transformative competencies will represent the basis upon which future education and educators should rely on (OECD, 2018).

Creating new values, reconciling tensions and dilemmas, and taking responsibility are the three main groups of such transformative competencies. What it emerges from an in-depth reading of this report is that the education of future managers could not be exempted from adopting the same principles and logic, adapted to the specific context of educators of business and management disciplines.

Within this book, I adopt the same transformational process invoked for students, to my personal experience. Specifically, my principal intent is to use storytelling to present the case of an experiment I have conducted in one of my courses about the introduction of an Education for Sustainable Development (ESD) experience, run during the academic year 2018/2019. This book is shaped to provide to the reader modern insights and suggestions on how to replicate similar initiatives, with their pros and cons, limitations, and opportu-

nities. As such, the transformative journey regards how to transform the learning environment (the university), the pedagogical techniques for ESD, and, finally, the impacts on the students' knowledge and capabilities.

Furthermore, an analysis of the research papers and scientific contributions is provided to give robustness and a strong scientific background to every step used in running the experiment. As such, the presentation of the content starts with an indirect narration of pieces of evidence, to switch to a personal narration of facts later in the text, able to guarantee an evocative and emotional reflection on the experience. The narration of the events follows the scientific method called autoethnographic research approach that will be discussed, especially in comparison to alternative research method such those of personal accounts or ethnographic research or action research models.

In Chapter 1, the profile of a sustainability-oriented university is provided within a historical excursus from the beginning of the movement of universities for sustainable development, the Talloires Declaration, the Decade of the Education for Sustainable Development, and finally, the introduction of the Sustainable Development Goals (SDGs). Studies addressing the critical features of strongly-sustainability oriented universities are presented. In addition, Chapter 1 presents a selection of the most relevant international initiatives that have been founded to support universities providing tools, guidelines, and benchmarking opportunities. The chapter is structured to cover all the dimensions of the sustainability concerns of universities, that can be summarized as the institutional framework, campus operations, teaching, research, community engagement, and accountability and reporting.

Chapter 2 provides implications for education. The paradigm of Education for Sustainable Development is interpreted using the lens of business and management courses or, in general, for business schools. The complexity of the paradigm is analysed discussing feature-by-feature, such as interconnectivity, multidisciplinary knowledge, interdisciplinarity, trans-disciplinarity, interactivity, academic freedom, and empowerment. Later on, this chapter provides a list of useful criteria to business schools and management courses educators to design an ESD, that are derived from the most supported international initiatives like the United Nations Principles for Responsible Management Education (UN PRME) or Global Responsible Leadership Initiative (GRLI). In the last part of the chapter, the concept of transformational learning, derived by Jack Mezirow, is presented, and discussed in its salience aspects. The theoretical and practical implications for business and management courses have been associated with every aspect. From Sage on the Stage to Guide on the Side, student-centred learning, active learning, cooperative learning, participatory and experiential learning are discussed about their potential implications for

ESD. Chapter 2 ends with a presentation and a discussion about the role of soft skills for ESD aimed at creating competences-based learning in future managers.

Chapter 3 has been wholly dedicated to discussing the methodological implications of this study. It starts by presenting the reason why an autoethnographic research approach could be considered an appropriate option for a study on an ESD experience in a business course. The general idea here is to use a method that allows providing contextual implications for educators. Specifically, relevant papers of business and accounting research streams are used to support the choice of such methodology, mostly based on the previous work of Kathryn Haynes, whom I had the pleasure to meet in the UK during an ESD workshop she organized in 2017. The chapter is developed to present the context of the University of Turin in the exact timeframe when I have run the experiment, herein the course of Risk Management and Green Business Strategy. To describe the composition of the class, among other indicators, one has been designed using the brand-new SDGs Index score. Such a score has been designed and applied to understand how much the international provenance of students should be considered as a critical factor during the design phase of a course. This is because, the experiment in question, was conducted within an international and multi-ethnic class, and there is a significant difference in talking about poverty in a class of students all from rich countries of northern Europe, or a class composed of students from developing countries. The chapter ends by providing elements that I have considered while designing the course to have a higher level of inclusivity and engagement.

In Chapter 4, I provide a detailed analysis of the projects presented by students involved in what I call the treatment group, according to the fact that, like in a counterfactual experiment, I have compared the outcome of the group doing the ESD with the performance achieved by the students frequenting the same course, but the previous year, where the ESD was not implemented. The two groups analysed are comparable for background and dimensions. For these projects, I narrate the main aims, the partners involved, and a sort of critical analysis of their major successes or failures. Specifically, projects have been run according to three main directions: projects that involve existing businesses (local), projects that involve family businesses (here a broader geographical dimension has been tolerated) and projects involving the university community or the university buildings in the first place. These three indications have been established to set up an experiment with an evident spillover effect on the real economy of the places and communities involved. I have taken this decision after revising the extensive literature on the role of universities as engines for the local economies, and as places where it is possible to

innovate, the so-called Living Labs (thoroughly analysed in Chapter 1 and Chapter 2). Critical and reflexive considerations found their place of discussion at the end of this chapter with the evaluation of the primary outcomes.

Finally, in the conclusive pages, I recall for the essential elements of the ESD experience providing a self-reflection on the primary outcomes achieved and the main limitations faced, referencing again to the OECD report about the education of the future. The chapter ends with a call to all educators involved in sustainability-related topics to develop a greater sense of agency from the inside of our micro-institutional contexts (a department, a course) for delivering an adequate education for sustainable development in business and management courses.

Chapter 1
The sustainability-oriented university

1.1. Higher Education Institutions for sustainability

The need for universities and other Higher Education Institutions (HEIs) to reach an adequate level of sustainable development was firmly invoked by the United Nations in 2015, when the General Assembly adopted the 2030 Agenda 2030 for Sustainable Development (United Nations, 2015). This Agenda introduced the world to the, now well-known 17 Sustainable Development Goals (SDGs), which encapsulate the most compelling priorities for the wellbeing of the planet and its people.

This Agenda, and more particularly the 169 sub-indicators of the SDGs, for the first time in history, operationalised the notion of sustainable development, introduced in Brundtland's 1987 report ("Report of the World Commission on Environment and Development", 1987). Through these goals, UNESCO (2017b) calls every person, and every organisation, no matter its profit orientation, to act together to create a better world (Table 1).

While the link between education and sustainable development is not new, in 2015, the United Nations clarified that a new type of education should be introduced to support the SDGs, because the global challenges presented require a systemic approach. This type of education, mostly transformative, prompted universities to start a sort of self-critique, to understand not only what is taught and how, but also where (in terms of physical settings) and the relationships between the context and the content of the lecture. Part of this volume will provide a more in-depth discussion and empirical evidence of this type of transformation.

For the first time in history, and specifically at the beginning of the Nineties, universities' representative met in Taillores (France), to sign the first declaration concerning the role of universities for sustainability education (Khan, 2013). During that event, more than 500 university leaders coming from more

than 50 countries joined that meeting [1]. The website of the event still reports an official declaration (the Report and Declaration of the Presidents Conference) [2]:

> "*Universities educate most of the people who develop and manage society's institutions. For this reason, universities bear profound responsibilities to increase the awareness, knowledge, technologies, and tools to create an environmentally sustainable future. Universities have all the expertise necessary to develop the intellectual and conceptual framework to achieve this goal. Universities must play a strong role in the education, research, policy development, information exchange, and community outreach to help create an equitable and sustainable future*".
> (Association of Universities Leaders for a Sustainable Future website, accessed in September 2020).

The signatories agreed upon the implementation of several principles [3],

---

[1] In June 2020, the total signatory institutions are 513, among which incredibly there is only one Italian university (Tuscia University).

[2] The Association reported also: "there is a critical shortage of specialists in environmental management and related fields. Universities must produce environmentally literate specialists in demography, engineering, science, economics, social sciences, health, and management, particularly for developing countries" (For further information: http://ulsf.org/report-and-declaration-of-the-presidents-conference-1990/).

[3] Actions signed by signatories' universities are:
1. Increase Awareness of Environmentally Sustainable Development: Use every opportunity to raise public, government, industry, foundation, and university awareness by openly addressing the urgent need to move toward an environmentally sustainable future.
2. Create an Institutional Culture of Sustainability: Encourage all universities to engage in education, research, policy formation, and information exchange on population, environment, and development to move toward global sustainability.
3. Educate for Environmentally Responsible Citizenship: Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens.
4. Foster Environmental Literacy For All: Create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional students.
5. Practice Institutional Ecology: Set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction, and environmentally sound operations.
6. Involve All Stakeholders: Encourage involvement of government, foundations, and industry in supporting interdisciplinary research, education, policy formation, and information exchange in environmentally sustainable development. Expand work with community and nongovernmental organisations to assist in finding solutions to environmental problems.

among which the declarants are called to support education in two ways:

– *Educate for Environmentally Responsible Citizenship*: establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens;
– *Foster Environmental Literacy for All*: create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional students.

Later in 1992[4], during the Conference of Rio de Janeiro, the education for sustainable development has been established as a fundamental pillar, and its importance has been recalled during the Johannesburg conference in 2002 and 2012 again. In 1993, the *Copernicus – The University Charter for Sustainable Development*, was released in response to the Earth Summit of Rio de Janeiro. That event marked a breakthrough, raising the attention of all European universities in creating a collective movement to assure a better sustainable future. After the Bologna Process, COPERNICUS launched a guideline in which universities were called to consider a list of relevant variables, all important in orienting universities to be more sustainable. These variables were: institutional commitment; environmental ethics; education of university employees; programmes in environmental education; interdisciplinarity; dissemination of

---

7. Collaborate for Interdisciplinary Approaches: Convene university faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula, research initiatives, operations, and outreach activities that support an environmentally sustainable future.
8. Enhance Capacity of Primary and Secondary Schools: Establish partnerships with primary and secondary schools to help develop the capacity for interdisciplinary teaching about population, environment, and sustainable development.
9. Broaden Service and Outreach Nationally and Internationally: Work with national and international organisations to promote a worldwide university effort toward a sustainable future.
10. Maintain the Movement: Establish a Secretariat and a steering committee to continue this momentum, and to inform and support each other's efforts in carrying out this declaration.

[4] An historical excursus on policies signed by universities during international conferences and world committee should include: Halifax Action Plan for Universities of the conference on "Creating a Common Future," December 1991; Swansea Declaration of the Association of Commonwealth Universities, August 1993; Copernicus University Charter for Sustainable Development of the Conference of European Rectors, Autumn 1993; Kyoto Declaration of the International Association of Universities, November 1993; American College and University Presidents' Climate Commitment (PCC), 2007.

knowledge; networking; partnerships; continuing education programmes and, finally, technology transfer. The guideline is still available, although the movement seems to be silent[5].

The importance of the training and education has also been included in the article 12 of the Paris Agreement signed in December 2015 by world leaders. During the United Nations Framework Convention on Climate Change COP21 (UNFCCC), scientists have presented a complex scenarios concerning the increase of global temperatures that should be kept below 2 degrees, and called for practical short-term efforts to limit the rise to 1.5 degrees above pre-industrial levels (Van Wynsberghe & Moore, 2015). In that context, universities have been clearly involved in collective actions with the normative engagement of the article 12.

Table 1.1. – *The 17 Sustainable Development Goals of the United Nations*

GOAL 1: NO POVERTY	Economic growth must be inclusive to provide sustainable jobs and promote equality.
GOAL 2: ZERO HUNGER	The food and agriculture sector offers key solutions for development, and it is central for hunger and poverty eradication.
GOAL 3: GOOD HEALTH AND WELL-BEING	Ensuring healthy lives and promoting the well-being for all at all ages is essential to sustainable development.
GOAL 4: QUALITY EDUCATION	Obtaining a quality education is the foundation to improving people's lives and sustainable development.
GOAL 5: GENDER EQUALITY	Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.
GOAL 6: CLEAN WATER AND SANITATION	Clean, accessible water for all is an essential part of the world we want to live in.
GOAL 7: AFFORDABLE AND CLEAN ENERGY	Energy is central to nearly every major challenge and opportunity

Segue

---

[5] The guideline is available at http://www.unece.org/fileadmin/DAM/env/esd/information/ COPERNICUS%20Guidelines.pdf. The guideline is aimed at providing support to universities with the aim of: integrating sustainable development into the degree structure (modules); integrating sustainable development into the qualifications framework and learning outcomes; integrating sustainable development into quality assurance; and, improving the social dimension and the attractiveness of the European Higher Education Area by integration sustainable development.

GOAL 8: DECENT WORK AND ECONOMIC GROWTH	Sustainable economic growth will require societies to create the conditions that allow people to have quality jobs.
GOAL 9: INDUSTRY, INNOVATION, AND INFRASTRUCTURE	Investments in infrastructure are crucial to achieving sustainable development.
GOAL 10: REDUCED INEQUALITIES	To reduce inequalities, policies should be universal in principle, paying attention to the needs of disadvantaged and marginalised populations.
GOAL 11: SUSTAINABLE CITIES AND COMMUNITIES	There needs to be a future in which cities provide opportunities for all, with access to basic services, energy, housing, transportation and more.
GOAL 12: RESPONSIBLE CONSUMPTION AND PRODUCTION	Responsible Production and Consumption
GOAL 13: CLIMATE ACTION	Climate change is a global challenge that affects everyone, everywhere.
GOAL 14: LIFE BELOW WATER	Careful management of this essential global resource is a key feature of a sustainable future.
GOAL 15: LIFE ON LAND	Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss.
GOAL 16: PEACE, JUSTICE AND STRONG INSTITUTIONS	Access to justice for all, and building effective, accountable institutions at all levels.
GOAL 17: PARTNERSHIPS FOR THE GOALS	Revitalize the global partnership for sustainable development.

Source: United Nations, 2015.

A turning point in history has been the Decade of Education for Sustainable Development (2005-2014), which had the goal of integrating principles and practice of sustainable development in every level of education and learning from young children education to adult education and training, and lifelong learning as well (UNESCO Education, 2015).

Since 2015, three other significant changes happened at a systemic level. These changes have strongly impacted the HEIs system and, specifically, the sustainability education: (i) the transition from Education for Sustainable Development towards Education for Sustainable Development Goals; (ii) the Greta Thunberg phenomenon; and, (iii) the COVID-19 outbreak.

According to UNESCO (2017b), Education for Sustainable Development (ESD) is a "holistic and transformational education that addresses learning content and outcomes, pedagogy and the learning environment". It does not only

integrate contents from different disciplines, but it also creates interactive and learner-centred teaching. Although this pedagogical approach can sound as innovative, the learning of SDGs requires to consider also other factors, to be truly effective. The first is the intrinsic nature of SDGS as interconnected elements (Weitz, Henrik, Nilsson, & Skanberg, 2018). The second is that a theoretical training based on SDGs should be designed including the entire ecosystem of education (Spangenberg, 2017). For instance, the SDG 4, with its target 4.7, explicitly explains the importance of cognitive and non-cognitive aspects of learning, and it calls lecturer to boost courses dedicated to sustainable leadership. Consequently, a dogmatic approach to learn SDGs would be a failure. A new paradigm should be introduced instead, namely the Education for Sustainable Development Goals (ESDGs), a specific subset of ESD aimed at implementing a sort of holistic and transformational education that addresses learning content and outcomes, pedagogy and it gives relevance to the learning environment (UNESCO, 2017).

The ESDGs breaks the traditional boundaries by discussing and criticising a syllabus, the pedagogical techniques, the timing, the components of physical environment and the composition of the classes. ESDGs critically examine all the cause-effect links between the variables included in an education programme (Efthimiou, 2017).

The second relevant change could be introduced by two brand-new lemmas: *Friday for futurism* or *gretathunberg-ism*. These two words represent the sociological phenomenon linked to the several *j'accuse* discourses of the Swedish activist Greta Thunberg and her followers, founders of the Friday for Future movement exploded in 2018 onwards. "Listen to the scientists!" said Greta Thunberg in several events. Without any previous examples, Greta's public image has represented for the HEIs system a generalised breakthrough after centuries of irremovable behaviours in academia. The Friday For Future movement, with the support of its students, has boosted universities to start a dialogue with students, whom in turn have started independent-run projects, boycotting campaigns, asking for learning and being prepared and educated to cope with the challenges presented by the sustainable development. One of the merits of this new wave of activism is having recalled teachers and professors to move from sterile debates in the name of neutrality, to embracing an active critical engagement, specifically exposing when, where, or whether critical engagement with the world enters into education or not (Jandrić *et al.*, 2020; Skilbeck, 2020).

Furthermore, as a third relevant change, we have the COVID-19 outbreaks, defined by many as one of the most disastrous challenges that HEIs have ever faced (Universities UK, 2020). COVID-19 outbreak has led universities re-

thinking their distance learning strategies, disrupting classes, dissolving university campuses, and surrounding universities operations with a prolonged period of uncertainty (Ahlburg, 2020; Ling, 2020; Medina, Melchert, & Stowe, 2020; Raaper & Brown, 2020). Without any doubts, traditional teaching has been widely impacted, but also an innovative form of learning that requires to alter the traditional relationships between teachers and learners will have an impact (Dagiliūtė, Liobikienė, & Minelgaitė, 2018). On the other side indeed, COVID-19 pandemic has called universities to create synergies with their local communities in providing services that go beyond their traditional mission, opening new engaging theoretical and practical scenarios for university-community collaborations.

1.2. Towards a sustainability-oriented university: what we know

A steadily growing research is exploding on the concept of sustainability in HEIs. Without any doubts, this is and will be in future one of the most exciting fields of research for sustainability scientists and scholars. And scholars of business ethics and stakeholder management experts, have started reconsidering the concept of University Social Responsibility that today is acquiring a new impetus (Belyaeva, Scagnelli, Thomas & Cisi, 2018).

According to Meseguer-Sanchez *et al.* (2020), universities are socially responsible when they produce a positive impact on society through education, research, and the transfer of knowledge and technology, as well as educating future sustainability leaders (for instance through ESD). Cortese (2003) stresses the critical role of universities, invoking a better alignment between education, research, university operations and external community that should be coherently defined and run[6].

The profile of a sustainability-oriented university is becoming one of the most researched fields, as universities need for benchmarking, best practices and reciprocal exchange of knowledge, also due to the hackneyed trend of manage and account that a university is sustainable (Moggi, 2019). Furthermore, for their essential role of educators of current and future decision-makers, universities are called to be local and global leaders that drive societies towards a

---

[6] As an example, the website of the Sustainability Office of the Massachusetts Institute of Technology (MIT) reports three scales of impact for the sustainability projects run by MIT communities: the "you + Campus", the City scale and the Global scale. These are examples of the transformative solutions that require a deep collaboration among the community leaders and the members of the MIT to achieve successful results.

development that should be sustainable (Godemann, Bebbington, Herzig, & Moon, 2014).

The existence of a social contract between universities and the societies is now establishing to go beyond the duty of developing concepts or to corroborate theories with pieces of evidence, but also to transform universities (Corazza, Cisi, & Scagnelli, 2018). This transformation regards universities as new leading actors in envisioning the next set of societal values, to be transferred to students in a way they could become the next future leaders for societal progresses and for the advancement of the knowledge (Calvano, 2017).

This steadily growing trend is demonstrated by an analysis of the publications included in the Scopus database (accessed in September 2020). The search of the keywords "sustainability" AND "Higher Education Institutions" returns nearly 1000 results. Specifically, as reported in Figure 1, a steady growth has started from 2012 onwards, where the most productive year in terms of publications has been 2019, and 2020 is already fruitful of research contributions to confirm this exponential trend (Figure 1.1).

Figure 1.1. – *The trend of publications on sustainability in HEIs*

$R^2 = 0,9699$
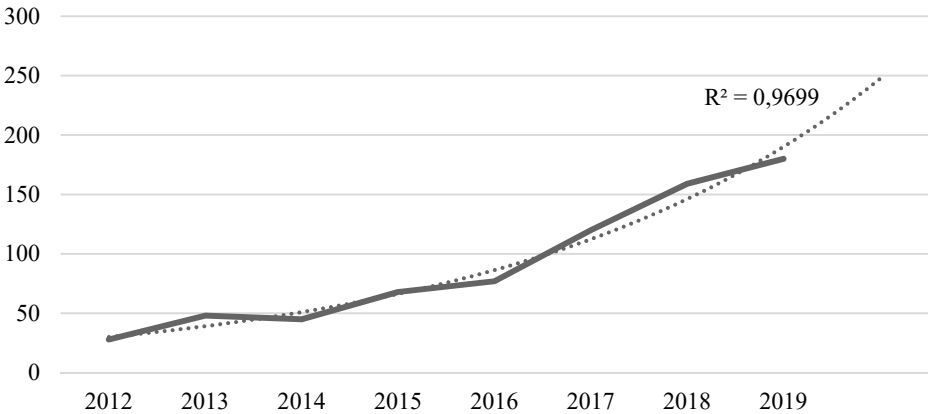
Source: author's elaboration on Scopus search.

Regarding the editorial output, three journals distinguished themselves, specifically: *International Journal of Sustainability in Higher Education, Sustainability*, and *Journal of Cleaner Production*. Besides, the World Sustainability Series, edited by Springer, publishes monographs, and collected books on multidisciplinary and interdisciplinary approaches towards sustainability edu-

cation. Regarding the subject area, it is interesting to note that, while education represents 2/3 of the results, 1/4 is represented by *business, management and accounting* category.

After having refined the research focus, selecting only works of business-management-accounting group, most of the publications come from the *Journal of Cleaner Production*, while discontinued publications are published by *Sustainability Accounting Policy Management Journal* and few others. Within this category, the prevalence of works has been published by UK scholars, while only 11 documents have been written or co-written by Italian academics, opening a space for further contributions (Figure 1.2).

Figure 1.2. – *Documents classified by author's affiliation*
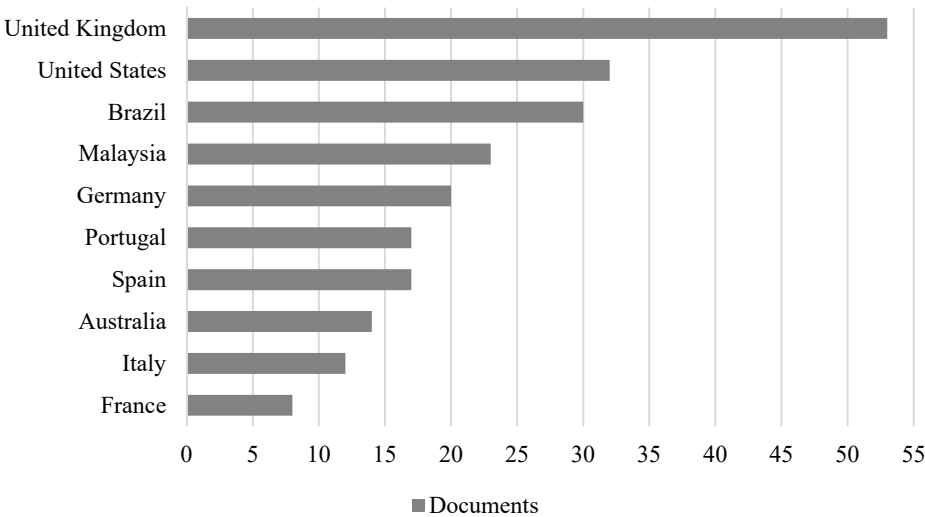
Source: author's elaboration on Scopus search.

Among the most cited documents indeed, an interesting category is represented by practical guidelines and sectoral reports. They are usually designed by national and international associations of universities whose mission is to drive HEIs towards sustainable operating practices. The practical intent of these guidelines is to spread knowledge and share best practices among the networked organisations. This chapter will refer to the most relevant initiatives, to help the reader in grasping relevant knowledge on practicalities that can be helpful for future ideas and projects.

1.3. Studies and initiatives on sustainability-oriented universities

As said before, the topic of a sustainability-oriented university is steadily growing thanks to the relevant support of the part of the academic community that believes in the social responsibility of the universities (Dyllick, 2015). According to a recent paper of Fissi *et al.* (2021), there are different dimensions that qualify a sustainability-oriented university, such as institutional framework, campus operations, teaching, research, community engagement, and accountability and reporting. Similar features are also confirmed by Findler *et al.* (2019) letting the discussion of such variables that depict an ideal profile of a sustainability-oriented university.

In considering the shift from traditional universities and the more sustainable ones, we should consider their specific *institutional and organisational features*. Universities can significantly vary, according to their age, size, geographical locations, layouts, type of management, profit orientation, vocation, among others (Ingallina & Charles, 2018). Under a sustainability perspective, there are many differences between these variables and the sustainability impacts in terms of social, environmental, and financial implications. For instance, we cannot expect that a campus-centric university, that sometimes is described as a small city would have the same sustainability problems of civic universities, whose buildings are distributed on the entire planimetry of an existent metropolitan and urban area (Ávila *et al.*, 2017). Also, the vocation towards sustainability teaching enters in the institutional framework in several ways; most of them can be labelled as organisational changes (Godemann *et al.*, 2014). Among these changes, there is the signature of ethical charts and international roundtable, institutions of sustainability boards, sustainability managers, as well as the creation of specific departments, and, at a governance level, of specific delegates (Leal Filho, Vargas, *et al.*, 2019; Leal Filho, Will, *et al.*, 2019).

Gender equality, anti-discrimination policies and inclusive educations are part of this institutional change (Teelken & Deem, 2013). For instance, the mission of the International Sustainable Campus Network (ISCN[7]) is to provide an international forum to support higher education institutions in the exchange of information, ideas, and best practices for achieving sustainable campus operations and integrating sustainability in research and teaching. This charter was written for research organisations and HEIs that understand the vital role they play in developing the technologies, strategies, citizens, and

---

[7] Please refer to https://international-sustainable-campus-network.org/ for further information.

10

leaders that we need to achieve a more sustainable future. Signing the Charter represents an organisation's public commitment to aligning its operations, research, and teaching with the goal of sustainability. The Charter is structured around three principles:

- To demonstrate respect for nature and society, sustainability considerations should be an integral part of planning, construction, renovation, and operation of buildings on campus.
- To ensure long-term sustainable campus development, campus-wide master planning and target-setting should include environmental and social goals.
- To align the organisation's core mission with sustainable development, facilities, research, and education should be linked to create a "living laboratory" for sustainability.

Another relevant international initiative is the Principles for Responsible Management Education (PRME), a United Nations-supported initiative founded in 2007. Born as a platform to raise the profile of sustainability in schools around the world, PRME equips today's business students with the understanding and ability to deliver change for the future. Universities joining the UN PRME share their commitment in adopting six principles: purpose, values, method, research, partnership, and dialogue. Working through these principles, universities should provide future leaders with the skills needed to balance economic and sustainability goals. Even this voluntary initiative accounts for 800 signatories worldwide, only two Italian universities joined UN-PRME [8].

In Italy, the so-called University Network for Sustainable Development (RUS) [9] and the Italian Alliance for Sustainable Development (ASviS) has established several working groups at a national level. In RUS, public university managers can share best practices and create new standards. In the national landscape, the work of RUS has dramatically improved the sustainability orientation of Italian HEIs, especially for the so-called *campus operations* [10]. According to Leal-Filho *et al.* (2019), green operations regard green buildings,

---

[8] For the sake of completeness, these two universities are SDA Bocconi and ALTIS Postgraduate School (data retrieved on September 2020, https://www.unprme.org/search?country=IT).

[9] https://sites.google.com/unive.it/rus/.

[10] Valid especially for US-based campuses and universities, there is the initiative called Second Nature with its chapter named Presidents' Climate Leadership Commitments. Among the tools offered, there are policies and guidelines, also for sustainability reporting. In their website (https://reporting.secondnature.org), they have a section dedicated to universities comparison in terms of emissions normalised for square meters and for the number of students, energy generation and carbon neutrality.

waste management, sustainable procurement and sustainable mobility. Inside the RUS, indeed, other areas have been included, such as water management, capacity building and food-related policies.

The two privileged missions, *teaching and research*, have been scrutinised by scholars, for their potential role in mobilising masses of students and creating a sort of alphabetisation for future sustainability leaders (Dagiliūtė *et al.*, 2018) to let them able to be future sustainability-oriented managers. As a golden standard does not exist, usually researchers have accounted for vertical and horizontal integration. For vertical integration, they mean that the university offer provides sustainability-related courses, while horizontal integration established to implement sustainability principles and concepts in traditional courses (Stough, Ceulemans, Lambrechts, & Cappuyns, 2018). To what concerns research, studies are emerging on how sustainability is integrated into research projects, research centres, spin-offs, patents, publications and university-industry collaboration projects (Lozano *et al.*, 2015). Specifically, two significant international associations operate in this field: the Higher Education Sustainability Initiative (HESI) [11] and the UN Sustainable Development Solutions Network (SDSN).

As reported on the dedicated section of the United Nations' website, HESI is designed as a partnership between United Nations Department of Economic and Social Affairs (UN-DESA), UNESCO, United Nations Environment, UN Global Compact's Principles for Responsible Management Education (PRME) initiative, United Nations University (UNU), UN-HABITAT, UNCTAD and UNITAR. It was created in 2012 just after the Rio+20 conference. Today, 300 universities joined HESI with the intent of teaching sustainable development across all disciplines of study, encouraging research and dissemination of sustainable development knowledge, green campuses and supporting local sustainability efforts, and engaging and share information with international networks. After the introduction of the SDGs, HESI has become truly oriented in mapping and sharing accountable results achieved by all the multi-stakeholder partnership implemented everywhere. In one of its latest report of 2019, HESI has mapped through a survey the commitment of 110 institutions, 103 support organisations, among which there are students' unions and 817 individuals-all spread across 85 countries. According to their results, 69% of the stakeholders involved declared to have found innovative ways to increase staff and student capacity to address the SDGs. For instance, SGH Warsaw School of Economics (Poland) has designed an on-line pre-course on sustainability-related arguments, suitable for first-year students, with few credits associated. Indeed,

---

[11] See the website https://sustainabledevelopment.un.org/sdinaction/hesi.

on the side of research, one-third of universities are implementing a sort of mandatory declaration for research projects, where researchers must link their publications and proposal to a specific SDG (or more than one) (HESI, 2019).

An exciting tool for educators and professors is the so-called Sulitest [12]. Sulitest was ideated in 2012 after the Rio+20 conference, and its experimentation is still ongoing. When it was created, Sulitest had the mission to "support expanded sustainability knowledge, skills and mindset that motivate individuals to become deeply committed to building a sustainable future and to making informed and effective decisions" (Sulitest website accessed in September 2020). If initially the test was designed to check knowledge and awareness, after years, the community of users are asking to implement features such as pedagogical interfaces, sample slide decks, case studies and curriculum examples. Moreover, the need for developing quizzes and collaborative tools is raising, as the importance of the soft skills linked to the knowledge of sustainability is becoming imperative.

A second initiative related to the university and academia is the SDSN. As in the previous case, SDSN was established in 2012 within the UN Secretary-General. SDSN is aimed at mobilising global scientific and technological expertise to promote practical solutions for sustainable development. SDSN, also in its regional chapter of the Mediterranean area, has created several training tools to support universities in rooting their mission towards SDGs. In the section named The SDGs Academy [13], trainers and educators can easily access presentations, and already designed courses and MOOCs about SDGs, and joining the Academy, professors can have access to use all the material in their lectures.

Furthermore, in Europe, the *European School of Sustainability Science and Research* [14], it is gaining momentum. This is a network of more than 50 higher education institutions belonging to 19 European countries that is aimed at sharing knowledge, teaching and research practices towards the introduction of the sustainability science herein curricula. Such a network is organising during the fall/winter 2020 its first World Sustainable Development Teaching Day, a moment where professors and lecturers coming from all over the World can share pieces of knowledge and expertise on their teaching practices and the results achieved.

An excursus should be made to the management of sustainability-oriented university through *research*. While the development of innovations and joint

---

[12] https://www.sulitest.org/en/the-sulitest-initiative.html.

[13] https://www.unsdsn.org/sdg-academy.

[14] Please for further information consult https://esssr.eu.

partnerships have received considerable attention from innovation management scholars (Ferraris, Belyaeva, & Bresciani, 2018), the commitment of universities in driving their basic research towards SDGs is a topic that needs further investigations (Waas, Verbruggen, & Wright, 2010). An example of the link between SDGs and research is the RRING European project [15]. In RRING, the paradigm of Responsible Research and Innovation is matched with SDGs establishing a series of principles and ethical conducts to be applied by every actor operating in the research field. With the intent of coordinating efforts and converging practices, RRING would create a community of practice, where people respect the Recommendation on Science and Scientific Researchers of the 2017 [16] jointly with anticipating and assessing potential implications and societal expectations with regard to research and innovation policies [17].

The fifth pillar of the definition of a sustainability-oriented university is *community engagement* orientation. While collaborations between universities and industries are one of the most productive research streams for scholars of innovation management (Geuna & Muscio, 2009), the creation of a partnership to lead research about sustainability is a research area that is growing. For instance, the concept of sustainability-oriented partnerships and the concept of sustainable academic entrepreneurship are two topics born in the recent years (McAdam, Miller, & McAdam, 2016; Miller, McAdam, & McAdam, 2014, 2016).

Traditionally, scholars have been involved in investigating how universities act as a driver for regional economies (Peer & Penker, 2016) and how they are anchored to their societies providing a reliable source of economic power and value creation (Howard, 2011). According to that stream of literature, authors have described the relationships between university and industry (called Mode 2), then with the concept of triple-helix, adding the presence of government with whom they are called to collaborate and also with other stakeholders (Etzkowitz & Leydesdorff, 1997, 2000; Leydesdorff, 2012; Leydesdorff & Etzkowitz, 1996; Leydesdorff & Meyer, 2003; Venditti, Reale, & Leydesdorff,

---

[15] The RRING project started in 2018 and it is aimed to last since April 2021. In that moment, the project will be transformed in a stable community of practice. For further information, please refer to https://rring.eu/about-us/.

[16] The original text and the following updates and revisions are available on the web-portal of UNESCO at http://portal.unesco.org/en/ev.php-URL_ID=49455&URL_DO=DO_TOPIC&URL_SECTION=201.html.

[17] The European Commission has oriented most of its funds of Horizon 2020 to be effective in translating the principles of Responsible Research and Innovation in practice https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation.

2013). Nowadays, the n-tuples helix collaboration is affirming that a crucial aspect for an HEI is to create social, cultural, artistic, economic value and many other dimensions of value, with and for a wide range of stakeholders with their operations. In this discourse, the value creation should be sustainable and inclusive of the various interests legitimated by these stakeholders, and it requires a changing in the traditional business model of a university (Carayannis, Grigoroudis, Stamati, & Valvi, 2019). A future avenue of research is represented by a new theoretical model elaborated by Oztel (2020): the *fourth-generation university.*

According to Oztel, a fourth-generation university is an HEI that jointly with core stakeholders, co-creates and promotes sustainable growth for the socio-economic environments in which they operate (Oztel, 2020). Going beyond education, research, and third-mission impacts, these universities negotiate, collaborate, and mutually co-create value to secure public value for a sustainable future (Broucker, De Wit, & Verhoeven, 2018; Hambleton, 2019). In this paradigm, different types of engagement are equally considered as necessary as teaching and research activities: the creation of third-mission impacts (Laredo, 2007; Rolfo & Finardi, 2014); community engagement (Gough & Longhurst, 2018); public engagement (Disterheft, Caeiro, Azeiteiro, & Filho, 2015); academic engagement (Kuntz, 2006), civic engagement (Cantor & Englot, 2014).

Another dimension that should be considered in terms of engagement is the development of universities as urban Living Labs (Verhoef *et al.*, 2020). Inspired by the traditional Living Lab definition of MIT of a "living laboratory" (Leminen, Westerlund, & Nyström, 2012), universities can transpose its logic to the university campus that involves a network of multi-stakeholder partners such as students, academics, technical staff, citizens, investors, into a participatory place to co-create innovations and testing them in a real-life context. Universities, as Living Labs, are an ideal place to test sustainable business models (Martí, 2018).

The last dimension of analysis is the role of *accountability* and *reporting* as a constituent of a sustainability-oriented university that wants to satisfy stakeholders information needs (Alonso-Almeida, Marimon, Casani, & Rodriguez-Pomeda, 2014; Gamage & Sciulli, 2017). A premise is due. Public universities are among those public organisations that, in the last years and most of the countries, have been subjected to a strict managerialisation, in large part motivated by financial distress, that has imposed a hyper-complicated framework of budgeting procedures, financial statements, non-financial statements and different forms of reporting (Parker, 2002, 2011, 2013). European universities and Italian ones are not an exception. As well documented in Moggi (2016),

several signs of progress and changes (not always positive, critics say) in the university governance systems have been brought by the New Public Management reforms (Dunleavy & Hood, 1994).

As clarified by Adams (2018), the values a university creates through relationships, research and teaching are mostly ignored or not considered in traditional reporting. The accounting, as a discipline, could let these types of relationships clear in terms of the effective university's contribution to the creation of sustainable development of those territories. For instance, through the use of accounting and accountability, a university could illustrate its strategy, and how that strategy matches with policies, processes, and the architectures that the university uses for manage its impacts on the society (Adams, 2018).

In universities, the attitude of creating accounts of the social and environmental performance has been since now an utterly voluntary action. However, governments and international associations are working together to create guidelines and standards to favour such a type of reporting in universities, with a regulatory intent. One of the main barriers to its adoption is the lack of dedicated standards (Moggi, 2019), as well as the lack of a systemic collection of the information requested, that impact over the continuity of the reporting process and on the quality of the sustainability reporting itself (Del Sordo, Farneti, Guthrie, Pazzi, & Siboni, 2016; Moggi, Leardini, & Campedelli, 2015).

The majority of the reporters adopt the Global Reporting Initiative (GRI) framework and its Standards implementing adaptations (like in the case of China) and changes, because the GRI presents indicators and operative suggestions on how to retrieve detailed data, even the GRI is not initially conceived for universities (Fonseca, Macdonald, Dandy, & Valenti, 2011; Frei, Lubinger, & Greiling, 2020; Lozano, 2011; Yalin, Erli, Yiwei, Xiaohua, & Xiaoyan, 2019). This has been explained as a consequence of institutional legitimacy and mimetic pressure (Larrán Jorge, Andrades Peña, & Herrera Madueño, 2019). The latest researches in terms of HEIs reporting affirm that the introduction of the Integrated Reporting Framework herein universities can be a useful tool to match the gap between the lack of a holistic integration of performances and the organisational structure responsible for achieving that sustainability results (Adhikariparajuli, Hassan, Fletcher, & Elamer, 2020; Brusca, Labrador, & Larran, 2018; Mauro, Cinquini, Simonini, & Tenucci, 2020).

Therefore, as it happened before, two other specific discourses should be made. The first is represented by the launch of a new version of reporting called Sustainability Tracking, Assessment & Rating System (STARS), the second is due to the accounting and accountability implications that emerge from the problems of adopting sustainability metrics in the global education market.

16

In the first case, 1.008 institutions have registered to use the STARS Reporting Tool. Most of them are American-based universities, especially the top-ranked (data in September 2020). STARS[18] is an initiative of Advancing Sustainability in Higher Education (AASHE) association, established in 2005 with the aim of "inspire and catalyse higher education to lead the global sustainability transformation" (AASHE website accessed in September 2020). STARS framework is aimed at elaborating a transparent, self-reporting framework for colleges and universities to measure their sustainability performance and accessible to stakeholders to check the signs of progress made by each university.

The last case is the hot topic of metrics. Sustainability metrics are putting universities all over the World in competition. They are creating disparities based on the criteria that are not applicable in every university context. For example, in the work of Sonetti *et al.* (2016), the authors affirm that most of these measures are biased as they do not consider the influence of the organisational features that we have presented at the beginning of this chapter. In the meantime, other metrics are putting universities under siege, like the birth of Times Higher Education Impact Rankings[19] that assess universities against SDGs, as they affirm evaluating "research, outreach, and stewardship" (Times Higher Education website accessed in September 2020). Finally, what is evident is that sustainability concerns require a complete and radical change in the way a university is managed and governed. Reporting and metrics should be developed and aimed to drive and boost who is lagging in improving their performance, and not in creating A-series of sustainable championships and a code of HEIs without any hope.

1.4. Weak sustainability/strong sustainability during the Anthropocene: the universities perspective

In the late Nineties, expert of sustainable development (mostly environmental economists) have started arguing the existence of two grounding model for sustainability, the first is called "weak sustainability", the second "strong sustainability" (Davies, 2013; Neumayer, 1999; Roome, 2012). Both paradigms refer to the notion of capital, and specifically on the prevalence, in terms of

---

[18] STARS is available at the website upon subscription https://stars.aashe.org/.

[19] Please refer to https://www.timeshighereducation.com/university-impact-rankings-2019-methodology to access to the complete methodology.

the importance of the natural capital over the human-made capital [20]. The ability to replace one type of capital with another distinguishes weak/strong models. According to the weak paradigm, natural capital and human-made capital are replaceable and a perfect substitute. On the other side, strong models affirm that natural capital is not substitutable (Dobson, 1998).

After 25 years of global debate, nowadays to talk about Anthropocene (Crutzen, 2002; Crutzen & Stoermer, 2000; Rousell, 2016) has become practically a daily habit in every faculty, even these talks are predominantly superficial and not contextualised. Coined by the biologist Eugene Stoermer and strongly supported by the Nobel Prize Paul J. Crutzen, the term *Anthropocene* refers to the geological era of our environment, where all the physical, chemical and biological variables, responsible to guarantee the existence of life species, are profoundly impacted by human actions. In the geochronological scale of events, after the 1950, scholars have started noticing the so-called "Great Acceleration", a period of great prosperity and economic development in several business sectors, happened thanks to an unsustainable exploitation of natural resources (Waters *et al.*, 2016). Human pressures on the biosphere have established the humankind as a new driver herein the natural variables that act over the climate (Rockström & Klum, 2015; Steffen *et al.*, 2015).

Consider the complexity of this scenario, those HEIs using horizontal integration, that is when students end traditionally held courses with few sustainability concepts mnemonically stored, do not truly contribute to the transformative potential of sustainability education for future leaders (Cottafava, Cavaglià, & Corazza, 2019). Clugston and Caldon (2014, p. 114) label this problem as a "reductive and narrow" way of teaching sustainability.

Conversely, as it will be discussed more in-depth in the next chapter, for transformative learning, students need a learning environment in line with a sustainability-oriented message, as one of the most relevant skills acquired during a transformational learning experience is the critical sense. Looking ahead and around the class, students are called to collect information, to question the sustainability management models (if present) adopted by the university itself, looking at cues, and, finally to act.

Concluding, the weak and strong sustainability orientation should overcome the notion of natural capital in an ecological sense, it must be applied to the ethical concerns of a university, including all the dimensions of capitals that can be holistically included. Under this perspective, scholars of integrated reporting can play a relevant role in the future to help universities adopting the

---

[20] There exists a third type of capital, called knowledge, that can be associated to human capital (Martin-Sardesai & Guthrie, 2018).

integrated thinking perspective at an organisational level (Adhikariparajuli *et al.*, 2020; Dumay & Dai, 2017). This is in line with Sterling *et al.* (2013) and with Koester commenting Sterling *et al.* (2013), both supporting the idea that the transition towards a strong sustainability-oriented university is a challenge, for both public managers and policymakers, especially for public-funded institutions.

In the next chapter, ESD is presented in its essential foundation stressing the nexus between the learning environment and the type of environment, what should be changed and how.

Chapter 2

Experiencing new models of learning for sustainability education in business and management courses

2.1. Profile of Education for Sustainable Development

From the previous chapter, we can conclude how strongly sustainability-oriented university should operate, that is through a holistic and coordinated orchestration of different variables. All of them are important, but education should play a relevant role. According to Clugston and Calder (2014), Education for strong sustainability should be oriented to:

– promote the ability of students in tracing interconnections with the ever-changing external environment, also developing a sense of care;
– understand the role of the one's behaviour, and the community behaviour over a never stop decision-making process;
– embrace an inclusive intent in conflict resolution, evaluating the importance of arriving at a shared consensus, where structures and solutions consider everyone's development;
– promote students' actions and stewardships sentiments towards future generations and present community life;
– supporting activism and developing a sense of leadership in each own's community (also considering professional practices).

With the introduction of the SDGs, the ESD should consider revising some of its traditional pedagogical approaches. For instance, without a proper contextualisation of each SDG, in terms of content and updated data, there is the substantial risk that students/learners will lose the sense of the problem or perceive SDGs as too utopic for being concrete (Spangenberg, 2017). Another risk that will be deeply discussed later in this book is the difficulty of the teacher/professor/facilitators in managing intercultural classes when he/she comes in presenting SDGs. Being inclusive through presenting SDGs implies that the educators will enter in critical discussion on ethical problems and is-

sues, of people and places he/she does not personally know, speaking and presenting problems of countries where she/he has never visited, and in general, of reinterpreting problems that can be familiar for the students more than for the lecturer. Sometimes the lecturer should refer to politically incorrect language or use a language that is not common in the academese. In doing so, the lecturer should not lose his/her sense of authenticity (Rosenblum, Schroeder, & Gino, 2020).

Specifically, the considerations for lecturers reported in this chapter refers to a business and management class. Following an SDGs education approach, the lecturer should consider a series of fundamental changes, such as interconnectivity, multidisciplinary knowledge, interdisciplinarity, trans-disciplinarity, interactivity, academic freedom, and empowerment. In designing the course, for instance, the lecturer should consider to vary the presence of a specific component, in terms of privileging one instead of another, but it is correct to affirm that all the features presented needs to be considered.

2.1.1. Interconnectivity

SDGs are expressed as goals and indicators. These goals and indicators are strictly *interconnected* because the socio-cultural and socio-political factors tight them closely (Weitz *et al.*, 2018; Weitz, Nilsson, & Davids, 2014). This interconnection is not always understood, as usually one of the main problems in discussing a sustainability problem is to adopt a cherry-picking behaviour (Lee, Petroni, & Shen, 2006). This is valid in sustainability accounting, as well as, in teaching; as lecturers, we tend to privilege to talk about what we feel closer to our attitude and where we are confident (Molthan-Hill, 2017). Teaching SDGs means to go out from our comfort zone to enter in danger and a risky area where academic neutrality does not exist, and the lecturer represents the *University* in becoming a catalyst of change (Chambers & Walker, 2016). It is not acceptable to focus the attention of the learners towards a single SDG without mention the existence of such interconnections.

According to the different streams of literature and knowledge, the topics addressed through SDGs are know as:

– grand challenges (Crow, 2010; Ferraro, Etzion, & Gehman, 2015; Martí, 2018);
– complex problems (Dorado & Ventresca, 2013);
– wicked problems (Brown, Harris, & Russell, 2010; Head & Alford, 2015);
– tamed problems that are usually more defined and where a causal link is clear (Pohl, Truffer, & Hirsch Hadorn, 2017).

According to Rittel and Webber's Ten Principles (1973), and the subsequent debate on super-wicked problems (Levin, Cashore, Bernstein, & Auld, 2007), the Education of SDGs must consider different elements. Table 2.1 reports the definition given by Ritten and Webber in 1973, the super-wicked problem additional four core elements (i.e. Levin *et al.* 2007) and the implications for lecturers.

SDGs shape a fully connected network, where each goal is tied with other goals through related targets and indicators (Le Blanc, 2017). Disentangling these interconnections is not easy as, most of the wicked problems included in the SDGs varies according to the different geographical and political context (Griggs *et al.*, 2013; Nilsson *et al.*, 2018).

Table 2.1. – *Critical issues in presenting wicked and super-wicked problems in class*

Wicked problems and super-wicked problems	Implications for Educators of SDGs	Implications for business and management classes
There is no definitive formulation of a wicked problem	Each SDG must refer to more than one wicked problem at a time	Students are sceptical in considering interconnection, as usually, they prefer to adopt and reason over linear solutions
Wicked problems have no stopping rule	SDGs are formulated in accordance with Agenda 2030, the failure of the precedent Millenium Development Goals should be presented in transparency	Students can be disappointed in embracing failure as an option
Solutions to wicked problems are not true-or-false, but good-or-bad	Presents that good-or-bad a changing scenario (actors, place, epoque) can compromise a solution	Students are usually more confident with the right/wrong option. Adopting other criteria to evaluate students' performances should be carefully presented and explained
There is no immediate and no ultimate test of a solution to a wicked problem	Presenting case studies in class should be accompanied by a critical analysis of the successful/unsuccessful experience and the motivations	Students should be supported in envisioning processes
There is no opportunity to learn by trial and error	Lecturers should consider other types of pedagogies to bring students closer to the problems	Students are encouraged in developing open-mindedness

Segue

Wicked problems and super-wicked problems	Implications for Educators of SDGs	Implications for business and management classes
Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions	Lecturers should present cases explaining the motivations and the antecedents of the success or failure for each specific case	Abductive reasoning should be developed
Every wicked problem is nearly unique	Presenting SDGs are problems, and lecturers should advise students about the explanatory nature of their example	Students are called to move from the example to a sort of abstraction
The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution	Presenting SDGs are problems, and lecturers should advise students about the explanatory nature of their example	Students are called to move from the example to a sort of abstraction
The planner has no right to be wrong	Lecturers can use presents problems with different planners' perspectives	Students are called to move from a sort of industry centrism to a multi-stakeholder view of problems
For super-wicked		
Time runs out quickly	Lecturers should present the time span of Agenda 2030	Students should consider 2030 as a reliable deadline
There is no central authority	The multi-stakeholder theory is essential to change viewpoints	There are differences in guiding bachelor students and master students. This must be considered when it comes to design the course
Those seeking to end the problem are also causing it	The lecturer should introduce critical thinking to let students able to apply it in reasoning	Students are called to critique the same companies that in other courses are presented as good examples
Hyperbolic discounting effects take place (reflecting how people discount future effects inconsistently).	Lecturers can use scenarios to give students an idea of long-term effects	Students usually fail in long-term envisioning, and they should be guided

Source: Author's elaboration on Rittel and Webber (1973) and Levin *et al.* (2007).

2.1.2. Multidisciplinary knowledge vs Interdisciplinarity

In her editorial of 2010, to open the Volume 1 of *Sustainability Accounting, Management and Policy Journal*, prof. Carol Adams writes:

"*I also encourage authors from different disciplines to work together to promote a multi-disciplinary perspective to developing practical and policy solutions to sustainability issues and problems facing organisations and societies*".

(Adams, 2010, p. 1)

Adams (2010), in her opening editorial, was referring to the role of developing research that breaks silos in accounting traditional journals and creates new multi-disciplinary perspectives to solve complex problems linked to sustainability. In education for sustainability, both learners and educators may find difficulties in grasping all the shades of a specific problem because they lack knowledge. This is specifically evident in business and management courses where inter-disciplinarity is privileged.

Through a multidisciplinary approach, the distinctive pillars of different disciplines can be instrumentalised to handle specific portions of complex problems, while through an interdisciplinary approach, concepts from different disciplines can be integrated to generate new ways of thinking (Rogers, Pfaff, Hamilton, & Erkan, 2015).

For instance, while it is probable to find the content of marketing explaining cause-related marketing, and courses of business strategy explaining the model of integrated CSR or Creation of Shared Value (Porter & Kramer, 2011), explaining thermodynamics or GHG conversion rates to future accountants sounds odd. Nevertheless, a precondition to developing effective learning of sustainability requires a basic knowledge of chemistry, physics, environmental economics, and other disciplines that all together can provide their definition of a specific problem.

As demonstrated in Cottafava *et al.* (2019), students that for the very first time start approach the studies of SDGs, feel their previous knowledge almost incomplete and inadequate, as complex problems require to analyse the problem with system thinking perspective and move from a silos approach to a systemic one (Pappas, 2012). The cognitive load required by systems thinking is higher when learners are called to cope with several interacting components that are needed to understand complex events, and how items of the systems work together and not as separated units.

A way to overcome this sustainability literacy problem can be the provision of a vocabulary that is shared with all the lecturers providing insights into sustainability "pills" in their courses. Also, scaffolding sustainability lemmas can

be an option, but students should dedicate time before the start of an official course. The overall idea is arriving to have a sort of balanced mix that can be effective to help students getting the sense of a specific measure or Key Performance Indicator for its true meaning, and not taking for granted a concept without asking "what is" or "how to get there" (Sherren, 2005). These disciplines can be fully integrated into the training offer of the entire bachelor and master (vertical integration) or, in case of horizontal integration different lecturers should agree upon a typical programme, or in case of the presence of different theoretical assumptions, this should be clarified (Annan-Diab & Molinari, 2017; Braßler & Block, 2017; Howlett, Ferreira, & Blomfield, 2016).

Following Kysilka (1998), interdisciplinarity should be emphasised when the training is aimed at guiding students to become influential decision-makers instead of simple receivers of knowledge, and teachers act in a paired way instead of working in isolation. It should be noted that interdisciplinarity and multidisciplinary training must be balanced according to the type of training, if bachelor, or master's degrees or post-graduate courses.

As mentioned before, a traditional class of business and management can perceive the study of rudiments of chemistry or physics in two unusual ways: (i) the *enthusiastic* appreciate to explore the new field of knowledge and apply new knowledge; (ii) the *dogmatic* recurs to blind mnemonic storage of the information without developing a profound interest on that subject.

2.1.3. Transdisciplinarity

According to Piaget (1972) commented by Evans (2015), transdisciplinarity can be defined as a principle for the unity of knowledge beyond disciplines, and its approach implies full interaction among disciplines from a real-life problem-based perspective. With transdisciplinarity, the learner and the educator should overcome traditional barriers developing a learning moment that is transcultural and transnational, encompassing ethics, spirituality, and creativity.

Only a few studies support the transdisciplinary approach when there are no clear borders among disciplines, and the university becomes an ideal place where knowledge can be transferred into the real practice (Adomssent, Godemann, & Michelsen, 2007; Mauser *et al.*, 2013). Specifically, after a vertical, horizontal or topic-specific learning (in the worst case), an ultimate transformation of an education program would culminate in achieving transdisciplinarity (Palma & Pedrozo, 2015).

Transdisciplinarity moves education from the search of explanations/theorization to a sort of articulation of activities in different realities, like for in-

stance, on the market, involving companies, with professionals and consultant. With transdisciplinary learning, the learners can increase their knowledge with the help of a representative of the real world, like a manager, or a policymaker (Tejedor, Segalàs, & Rosas-Casals, 2018). In sustainability education, transdisciplinarity is the right complement of the previous features, i.e. interdisciplinarity and multi-disciplinarity. In this sense, it breaks the academic fragmentation bringing the learners closer to who in practice is operating in the same field. Unfortunately, for being genuinely useful, trans-disciplinarity models of learning require long-term commitment, a participatory approach, adopting sort of project-based type of learning or at best, a safe place where solutions can be tested, like in the case of Living Lab.

According to Bernstein (2015), transdisciplinarity complements twenty-first-century education of wicked problems, for

"*its acceptance of, and its focus on, the inherent complexity of reality that is seen when one examines a problem or phenomenon from multiple angles and dimensions with a view toward discovering hidden connections between different disciplines*".

(Bernstein, 2015, p. 13)

Exemplifying the implications for business and management classes such projects could:

– be developed in collaboration with local companies and academic spin-offs;
– involve different categories of professionals, and their association included CPAs, statutory auditor, project managers, business analyst, venture capitals, private equity, investors;
– be designed with the help of sustainability specialists or CSR managers and their networks;
– be run under municipalities or local districts coordination;
– involve associations of students or environmental/social activists;
– be implemented herein the university buildings (like in Living Labs).

Transdisciplinarity is a complementary educational perspective also for business school students in addressing the complex and imminent, global challenges, and as essential for the future of education and the education for a sustainable future (Gröschl & Pavie, 2020).

A concluding remark is needed for transdisciplinary projects, that is the importance of reflexivity. Later in this chapter the concept of transformational learning will be deeply discussed, but here it is important to clarify that dialogical, critical and active learning requires a pedagogy in which teachers and students learn, reflect and act together, and by doing so transform themselves and the world around them (Freire, 1972).

Reflexivity can be intended as a subsequent step in project-based learning, that is fundamental to guide the learners in a critical moment of reflection. This activity is useful in developing the critical enquire after having experienced several multidisciplinary frameworks, having seen and tested the reality of projects/companies with limitations and issues, also operating collaboratively (Evans, 2010, 2019).

2.1.4. Interactivity

The level of interaction requested in education for sustainable development (and SDGs are well) goes over the traditional group-working activities, despite the working with peers is fundamental for the success of transformational learning. Moreover, different type of interpersonal interactions exists: (i) interactions among peers; (ii) learner-teacher interactions; (iii) learner-external environment interactions. The COVID-19 outbreak is compromising, and it will inevitably affect all the type of interactions that are discussed here, as classes are being disrupted, courses have been virtualised, and the physical presence of the student in the learning environment must include social distancing and other more or less strict rules of social behaviour.

Interactions among peers require to develop a course where active learning activities are included. An educator that wants to design a sustainability-oriented course should consider setting up a highly interactive moment. *Learner-teacher interactions* require the educator to take a step back in proposing his or her interpretation of knowledge to support learner's participation (MacVaugh & Norton, 2012). In-class interactions can be: group work, case studies, worked examples, peer teaching, debate, gamification learning opportunities or live discussions. During *learner-external environment interactions*, learners are called to work closely in the real-context project, like in the case of consulting projects or learning in the field. This type of learning requires to move the class or the learning moment outside the physical building of the university (Stough *et al.*, 2018).

In designing the curriculum, one should consider that interactivity, to be successful requires the simultaneous presence of factors like the physical layout of the room where classes are run; the time schedule; the composition of the class in terms of background and numerosity; the multi-cultural background of the participants; the prevalence in the overall curriculum of active learning moments. The lack of proper arrangements, the management of a large-size class, the redundancy of active learning moments in all the courses of the curriculum, short duration of classes, and multiethnic groups, can repre-

sent a risk factor. Having in mind that this volume portrays impressions developed after a decade of sustainability teaching and assistance in one of the most ancient Italian university and the Department of Management, some cultural factors emerged from the practical experience, such as:

– when rooms are not well-equipped for group works, the educator should study at first the proper arrangement of the rooms to avoid disturbance and discomfort of learners (flipchart, sticky notes, markers, white A3 sheets, floating desks equipped with wheels, availability of tablets or PCs are to be considered among the most useful elements);
– group works can also be set in large size classes (maximum 150 students), but the educator should consider devoting a relevant and significant amount of time in arranging and tutoring each group;
– classes of short duration (like classes of less than 120 minutes) can be critical in terms of time-management as usually the time of reflection requires the educator to listen at least once each group;
– active learning moments should be designed jointly with the structure of the entire curriculum to avoid that in each class people are called to make the same time of active learning vanishing the intent of applying a not traditional pedagogy;
– the presence of multiethnic groups is a fortune in sustainability education, as the educator can involve different cultural perspective in a constructive dialogue. However, sometimes they represent a very critical issue for interactions, as they can evolve in cultural segregation and social exclusion.

At the time of this writing (September 2020), COVID-19 is at its peak in the entire globe. Most universities are accounting for the worst crisis ever, and classes are suspended from one day to another, or plans are made by every professor to have the chance of switching to virtual in one click. Remote facilitators tools are exploding, especially for their practical purpose of fostering interactions, and here there is a compact list of tools that can help facilitators and educators in their job [1]:

– to set up multiple meetings, like in the case of virtual group works, please considering Remo;
– to draw collaboratively, a useful source is Miro or Deskle;
– for gamification purposes, it can be used Kahoot, or Mentimeter;
– to create a shared board, based on lean-thinking, Trello is an option.

---

[1] All the web tools here presented are subject to copyrights.

2.1.5. Academic freedom

"Too abstract!" "Too theoretical!" "Disconnected from the reality of what a manager needs to know!". These are examples of comments received by colleagues during these years before the hype of ESG finance and non-financial disclosure. Educators sometimes feel frustrated in presenting SDGs or entering in the merit of explaining concepts like modern slavery, poverty, or hunger. This is even more true in business and management classes, where usually professors present case studies or invite testimonials and keynotes of local companies, talking about how their companies are doing good and how good corporate citizens they are.

As it is practically impossible today to find a company declaring their extreme joy in polluting or in firing their employees, educators of SDGs and their colleagues should coordinate the sense of their syllabi in order to give an ethical soundly message. For instance, one day of many years ago, my students had in the same week a lecture on the loss of biodiversity, critiquing a famous brand of jackets responsible for the slaughter of millions of goose chicks, and a marketing lecture who weaved the praise of that brand for the courageous choices made as a result of the fall of the corporate reputation. Despite this is anecdotal storytelling, what is crucial here is that those involved in teaching SDGs, also in business and management classes should consider the risks of being the voice from the chorus.

Academic freedom can be an internal barrier; educators' decisions on how to reach teaching and research, create difficulties of coordination with the other members of the teaching staff. On the other hand, usually, when teachers decide to experiment, they are sincerely committed especially toward sustainability in planning, programming, and incorporating such didactic reorientation changing their curricula (Ávila *et al.*, 2019). With academic freedom, a professor should experiment his/her traditional teaching, with the sole conditions, of crucial importance, of fostering education for the common good, more than satisficing the need of companies or the market demand (Cortese, 2003).

Valid for research, but even more valid for educators, personal values of an individual can be pivotal in driving an ESD to success (Leal Filho, Manolas, & Pace, 2015). Specifically, in ESD, students are called to argue whether who delivers the sustainability message is in the front-line of a sustainability movement. This is something usually ignored by man, but the coherence of the message and the sender is first and foremost.

Besides, the decision of setting up an ESD course is linked to a feeling of the educator, a sort of wish of being a change agent. In the work of Svanström *et al.* (2008), the authors stress the relevance of providing appropriate resour-

ces to enable sustainability educators to be effective change agents. Part of these resources can be labelled academic freedom. Academic freedom is discussed in Molthan-Hill *et al.* (2016), starting from the theorization of Eliot (1907). According to Eliot's thought, academic freedom enables educators (and researchers, as well) to teach subjects that genuinely interest them without the fear of societal silence and stigmatization. At an institutional level, this implies to allow the educator to present in class argument or to set up a course without being afraid of oppression or negative consequences on their professional careers or personal life.

On one side, academic freedom directly contrasts with the progressive commercialization of universities and their knowledge, as there exists a sort of neoliberal derive of the academic offer imposed by the market (Martin-Sardesai, Guthrie, & Parker, 2020). According to the authors, over the past 40 years, the rise of the New Public Management paradigm and neoliberalism has intensified changes in the way universities, disciplines and individual academics justify the quality of their work. Significant changes have transformed business schools and universities into commercial enterprises and commoditised education; nowadays, as the authors say, most academics work for increasing institutional status, brand reputation and revenue generation of their HEIs.

ESD will inevitably be an issue as public attention to sustainability is increasing almost everywhere. Educators not interested in sustainability, educators that do not believe in sustainability or those who care most for financial equilibrium at the expenses of external environment preservation and social cohesion, will be pushed to teach a topic, the ESD, that is very critical, because the market asks for this. However, what happens to the learners when there is a dichotomy between practising and preaching sustainability? Learning sustainability is becoming a social belief. In the book *Visible Learning and the Science of How We Learn*, the authors affirm:

> "*We form beliefs through social learning factors, and then learn how to defend them, particularly if we perceive them to be under attack from other social agents who do not share our same views*".
>
> (Hattie & Yates, 2013, p. 8)

The risk is that an ESD activity run by someone that does not believe in sustainability can result in ineffective learning or, at worst, in inadequate training. ESD requires learners to go beyond the information given and not merely to assimilate the information given. The behavioural economist and psychologist, Francesca Gino, Professor at Harvard Business School, is an expert of constructive non-conformity. While she is investigating non-conformity as a source of personal and organisational success (Gino, 2018), part of her

discoveries can be applied to sustainability education, especially in business schools or, more extensively, in business and management classes.

What can be applied in Gino's mindset is to cope with the problem of dissent. Dissent can be turned into a learning opportunity also in business and management classes, but in that learning environment is the educator that has to push students out of their comfort zones. Examples of strategies can be:

- look for disconfirming evidence, for instance asking students "What information suggests this might not be the right path to take?";
- create dissent by default encouraging debates section during lectures by inviting students to take opposing points of view, like the protagonist, the antagonist, the neutral or also representing the point of views of different stakeholders;
- identify courageous dissenters in the class or provide examples of how a dissenting idea can be welcome in a broad discussion, especially in wicked problems.

Creating a debate is a prerequisite to developing negotiation skills and conflict resolution, one among the most relevant soft skills that will be discussed later. To arrive at a shared consensus among the group of peers is fundamental. A similar activity has been experienced in the University of Turin, as reported in Cottafava *et al.*'s works (Cottafava *et al.*, 2019; Cottafava, Corazza, & Cavagliá, 2020). In that case, students have been called to interpret the role of a specific stakeholder of their university, like in the case of governance, professors and researchers, administrative and technical staff, students and their families, to give priority to what SDGs should be prioritised in the university sustainability policies. During those experiments, students have started debating, and they have found much pressure, especially in changing their perspective and point of views.

During the experiment, the students involved have stressed that the moment of the debate has been deeply appreciated as they have been called in interpreting a role that is not their traditional one. Students, for instance, tended to denounce vehemently the presence of specific sustainability issues (like the access to educations, the level of the fees for students, the services offered). However, when they have been called to design a plan, the budgetary requirement or the importance played by existing regulations was not perceived as so binding, when the reality is different.

As a general rule, when an educator/professor decides to get involved into a reorientation of its traditional pedagogical techniques, he/she should consider that associated to an increase in freedom, there is an increase of responsibilities, for the effective design of the course, for the results achieved, for the commitment of participants, for their expectations (Bramwell-Lalor, 2019).

Figure 2.1. – *Pictures were taken during the conflict resolution simulation*

Source: author's elaboration materials. Participants have signed informed consent.

2.1.6. Empowerment

Empowering students, mostly business and management ones, mean to tutor them in developing solutions that can be effective, not only in class but also in a real context (Ortiz & Huber-Heim, 2017). A fundamental step for a student that joins an ESD is to acquire the ability to move from a purely theoretical perspective, into the application of the necessary competencies to find and implement solutions in a real setting. Scholars stress the importance of active learning and especially of participatory education in which people are pushed to use critical thinking (Lyons, Smuts, & Stephens, 2001). Many support the idea that there is a separation between the freedom of an individual and the social freedom that an individual is called to support through empowerment (Gimenes, Machado, & Vernalha, 2019). Moreover, the learners of an ESD are called, by the end, to transform themselves. Empowerment is not guaranteed, because it can require conquering a specific right or it aims to affirm an equitable choice related to social and environmental well-being. As such, empowerment can include emancipation.

Despite this being a fundamental pillar of transformative education, sustainnability education is also aimed at developing competencies that can empower individuals to reflect on their actions. Reflexivity is about considering the impacts of a specific decision-making process on current and future social, cultural, economic, and environmental perspective, from a local and a global scale (UNESCO, 2017a).

If we consider the paradigm of change as a developmental process, learning outcomes can be seen as an evolution of reflective thinking skills, problem-solving abilities, and responsibility values, as reported by UNECE:

– learning from the past;
– inspiring engagement in the present;
– exploring alternative futures (UNECE, 2012).

According to UNESCO, empowerment and transformation are intertwined:

"*Emphasize the potential of ESD to empower learners to transform themselves and the society they live in by developing knowledge, skills, attitudes, competences and values required for addressing global citizenship and local contextual challenges of the present and the future, such as critical and systemic thinking, analytical problem-solving, creativity, working collaboratively and making decisions in the face of uncertainty, and understanding of the interconnectedness of global challenges and responsibilities emanating from such awareness*".

(UNESCO, 2014).

As a result of an ESD, learners become agents of change, but also individuals that can act in complex situations sustainably, becoming responsible citizens that are actively involved in cooperating for creating sustainable, democratic, and equal opportunities for all. Empowerment is a multidimensional variable, with variable scope-ranging from individuals to the global sphere. Inequalities, vulnerability, exclusion, the emancipation of the dominated groups and discrimination are a typical problem that requires the support of responsible citizens (Gallhofer, Haslam, & Yonekura, 2015).

2.2. Education for Sustainable Development in business and management courses: from theory to practice

Business schools and management courses have been scrutinised for years for their approach to sustainability science and sustainability management, today, the offer of contents related to sustainable development in management education is imperative. For instance, the same EQUIS and the Advancement of Collegiate Schools of Business (AACSB) are demonstrating to progressively include herein their accreditation scheme, specific criteria of sustainable development education. Inside their accreditation process, auditors control the presence of the so-called ERS, where E is for ethics, R for responsibility and S sustainability (Falkenstein & Snelson-Powell, 2020).

In a collegial work of the Global Responsible Leadership Initiative (GRLI [2]),

---

[2] To know more about the Global Responsible Leadership Initiative, please refer to their website available at https://grli.org.

a pool of researchers has established a list of accreditation criteria for business schools and management courses. Before dealing with the details of their propositions, it is useful to make a short excursus on the role of GRLI. The GRLI was born as a joint initiative of the United Nations with representatives of business schools in 2003. Nowadays, after different evolutions, it includes the United Nation Global Compact, the AACSB, the European Foundation for Management Development (EFMD) and PRME through different collaborations. As one of its aims is to promote responsible leadership in education and practice, GRLI pinpoints several actions to be supported by its community of practice, such as:

> "*Convene, facilitate and foster collaboration amongst actors and actions that hold a shared interest in promoting and developing responsible leadership.*
> *Pioneer and prototype new methods for learning and community building.*
> *Incubate ideas and initiatives that create impact, and that accelerates progress and transformation towards global responsibility.*
> *Contribute systemic and integrative thinking to the discourse on responsible leadership in education, research and practice.*
> *Promote awareness of global responsibility as the highest order of responsibility and contribute to the realization of the UN Sustainable Development Goals*".
>
> (GRLI website, accessed in September 2020)

Such community of practice has established in its publication titled "*Ethics, Responsibility, and Sustainability (ERS) in Business School Accreditation: Peer-Learning Perspectives*" a sort of picking list of useful questions and resources that a business school or a department of management should address for being audited, as well as introducing a sort of ESD in its curricula. These guidelines consider almost every sustainable aspects that have been presented in the previous chapter, but here I recall specifically those related to an educational perspective that is the sub-chapter named Programme and the other named Students (C. Cho *et al.*, 2014). The suggested practices are recapitulated in Table 2.2 and Table 2.3.

What happens when we try to interpret the previous two tables according to the educators' perspectives, duties, and responsibilities, and we contextualize that actions herein the boundary of public universities? If one of the main objectives is to expose students to ERS challenges and approaches, then educators should be trained to understand, recognize, present and design appropriate learning activities for students. Bringing in-class examples taken from the real-life context require that educator is, in turn, trained, as it is a risky activity. According to Leigh and Sunley (2017), academics involved in sustainability management education are called to contest the normative teaching and learning practices, and most of the time, they develop the so-called emotional inteli-

Table 2.2. – *Practices of ERS suggested by the Global Responsible Leadership Initiative to be adopted in programmes*

Programme
• Every student is exposed to ERS challenges and approaches.   • ERS themes are integrated across all programs offered by the school.   • ERS contents are integrated into general and specialised courses.   • Courses are offered that develop critical perspectives on the role of business in society, financial markets, the various schools of economic and management thinking, and the history and evolution of management theory and practice.   • Specialised courses and programs are developed and offered in areas related to existing and emerging ERS issues, e.g. new economic models, sustainable finance, societal challenges, responsible leadership, social innovation.   • New pedagogical approaches are developed and used for active and reflective learning and engaging relevant stakeholders.   • The school provides resources and support for course development and pedagogical training in the ERS field.   • ERS objectives are integrated into the learning outcomes and regular evaluations to cultivate the requisite competencies, commitments, and character of students.

Source: elaborated by the author from Cho *et al.* (2014).

Table 2.3. – *Practices of ERS suggested by the Global Responsible Leadership Initiative to be adopted with Students*

Students
• Changing global demands for greater ERS are recognised and responded to.   • Efforts should be made to attract and select students who demonstrate the commitment to ERS.   • Students' horizons are expanded beyond functional silos and narrow business disciplines, gender, cultural, and geographical boundaries.   • Responsible leadership is developed inside and beyond the classroom, through curricular and extra-curricular activities.   • Students' insightfulness into global and societal challenges is cultivated as well as the skills to address them (issue driven and solution oriented) effectively.   • Students are empowered to deal not only with today's problems but also with future challenges (e.g. the next 25 years).   • Students are personally challenged and empowered to develop their capacities to become reflective and responsible future leaders.   • The capabilities for dialogue, collaboration and serving many different stakeholders are developed.

Source: elaborated by the author from Cho *et al.* (2014).

gence. Emotional intelligence can be described as the ability to reason with emotions validly and to use emotions to enhance thought. There is a certain discomfort, especially in a particular type of teaching behaviour of specific topics, in appealing for emotional intelligence. For certain subjects, like for instance, audit, or tax accounting, emotional intelligence seems to get in net contrast with the neutrality asked future professionals.

To integrate ERS in all the programmes offered by a school or a department, and integrate topics into general and specialised courses, is a matter of coordination. There is a growing tendency in Italian universities to ensure that three-year degrees (*bachelor*s) provide a management student with the basic knowledge necessary to find a suitable job. At the same time, teaching for skills, competencies and soft skills is being introduced in the majority of universities as a prompt reply to the call to the army of the entrepreneurial system (Rusinko & Sama, 2009).

In general, however, there is a tendency to leave specialised subjects only in master's degrees, or at the limit as electives. This attitude contrasts with the principle of extending the study of sustainability vertically or horizontally because it becomes a subject that is chosen only by those who are already convinced or those sharing the same mind-set. Moreover, there is a growing belief that teaching should be oriented to help the highest percentage of students to find a job in the shortest time. Not a specific job, those jobs that are the most attractive to the average students of the course. This, on the one hand, represents an excellent opportunity for those who specialize on a sustainability topic, to orient their personal, professional career to sustainability. On the other hand, however, it is a limit and a barrier to a massive supply of sustainability-oriented courses for the majority of students.

According to the GRLI guidelines, and the pool of experts' suggestions, the ERS courses should be designed to develop critical perspectives on the role of business in society and they should be aimed at offering the students fresh ideas on existing and emerging ERS such as new economic models, sustainable finance, societal challenges, responsible leadership, social innovation. Although I agree on the modern side of ERS, I am more sceptical in supporting the critical perspective, because as a self-critique, no one has told me how to do that before. I have started developing my critical thinking when I have met one of my brilliant mentors, Prof. John Dumay of Macquarie Business School, Australia. I admit that I have started arguing about critique in management after our very first chat. While I was pretty much confident about my ability to think outside the traditional boxes, I have initially found too difficult to distinguish between critiquing and criticising, that is characterised by having those perfect level of knowledge and pieces of evidence that can help a researcher in

the stem for something and being sometimes *trenchant* but convincing. This reasoning leads us to the problem of pedagogical approaches.

Learning the pedagogies used for active and reflective learning is essential to deliver the right messages to students. A multidisciplinary approach towards sustainability also requires investing in the educators training, because also for educators is a matter of learning first, and then deliver to the class. Sometimes it requires to have educators with quite good and strong relationships with relevant stakeholders on the territory, but in other cases, it implies that the educator should go out from his/her comfort zone to deal with other actors. Especially for public universities, the RUS network is creating good connections between those involved in teaching sustainability at a university level, but more can be done to create connections, herein the same department, the same school and the same university, as well.

One of the last points addressed by the pool of experts that here I am analysing is the need to link learning outcomes and regular evaluations to cultivate the requisite competencies, commitments, and character of students. I suppose here that the community of academics could adopt two contrasting approaches. Those disciplines that are traditionally taught in the name of neutrality have also been rooted towards more objective final evaluations. For instance, it is easier to check a trial balance, more than if a student has developed a sense of commitment towards a specific sustainability issue that let him able to develop a project or a plan that is sustainable itself. In the first case, it is a matter of knowledge and application, in the second case indeed, there is a matter of acquisition of competencies, personal commitments, knowledge, applications of knowledge and also a qualitative evaluation of the solution proposed. Therefore, transformative learning, which will be presented in the next sub-chapter is at the core of ESD. It requires a holistic approach that starts with the design of the activity, and it never ends, because it is aimed at changing the personal behaviour of the learners irremediably. What a professor can do, is to stop its evaluation to the objective stage of the ESD, like in the case of project-based learning.

Regarding Table 2.3, several considerations can be made. At first, there is the attitude of the HEI in responding to a growing demand for ERS in universities courses, but also in case of sustainability-oriented courses, attention should be paid for functional silos. For example, a course developed to train environmental economists, that ignores the existence of the green finance or the sustainability accounting movement, will continue to offer a partial view of the problem, since multidisciplinary and interdisciplinary training are excluded. A second consideration can be drawn for the university boundaries problems. Active learning should be developed in-class, but also through the offer of ex-

tra-curricular activities, which are usually almost ignored in public universities. Third, soft skills are essential elements that active learning strategies support and promote. Empowerment, envisioning, and dialoguing complete the transition towards a type of learning that is transformative.

What happens when a university does not have the human and financial resources to support ERS? Of course, the knowledge of sustainability becomes additional, sometimes superficial or the message provided is ineffective because it is not complete or functional to the learners' needs. In the worst case, sustainability education is instrumentalised as a cash cow, creating a counterproductive effect in terms of training and the credibility of sustainability science.

Concluding, the role of educators for ERS is crucial, and this emerges from the causal loop diagram in Figure 2.2. ESD educators can be attractors of new students interested in ESD, that in turns will be more responsible citizens asking for more responsible companies, or they will be employed as responsible managers. At the same time, more ESD courses requested by students need for funding. However, these courses need, in turn, more training opportunities available for professors, to learn new pedagogies that increase the engagement of the students toward the sustainability concepts, increasing their critical thinking and transforming themselves. On the other side, having more ESD courses implies an increasing competition among professors that requires the need for coordination, that in turn could lead to possible conflicts. The causal loop attached has been developed having in mind a public university, so the variable related to financial resources is not linked to an increase of the commercialization of ESD course. However, it assumes the logic of having a limited stock of financial resources coming from ministerial funds.

In the next sub-chapter, the concept of transformative learning will be deepened, focusing on its features.

Figure 2.2. – *The design of a causal loop process linked to the increase of ESD courses in universities*
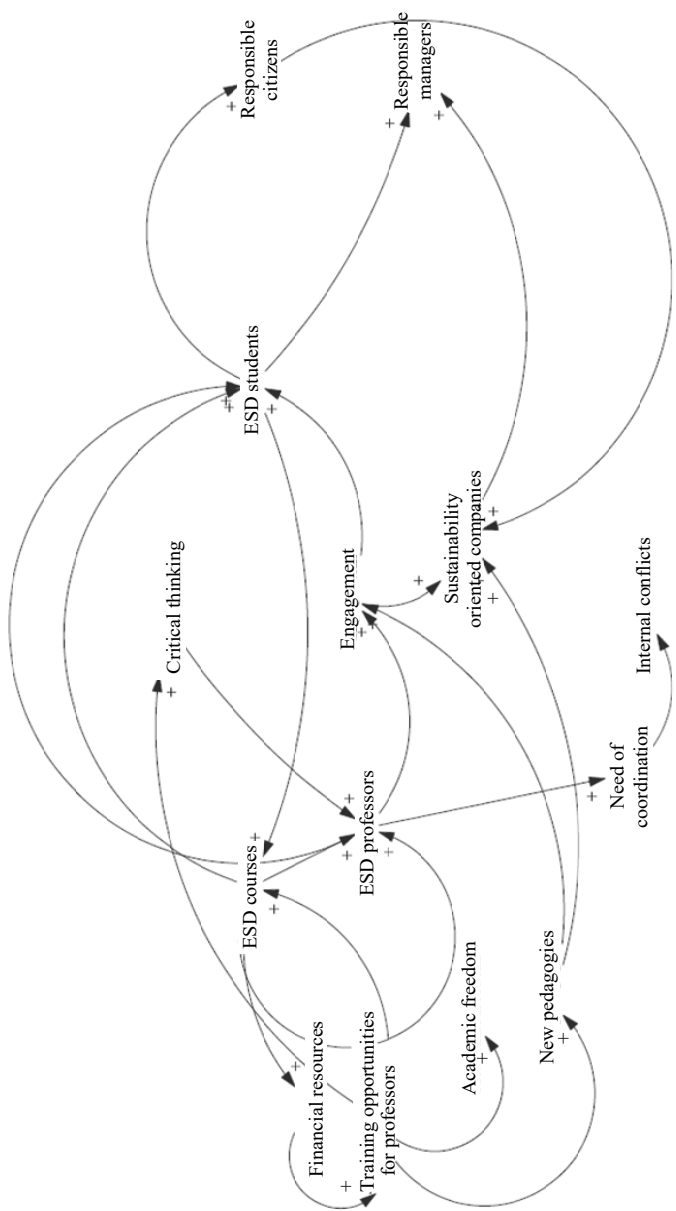
Source: elaborated by the author using Vensim software.

2.3. Basic of transformational learning applied to business and management education

2.3.1. Framing a definition of transformational learning [3]

Among one of the most cited scholars for transformational learning [4], there is the American sociologist Jack Mezirow, who opened this new field of knowledge in 1970. According to Mezirow, transformational learning requires the presence of specific conditions that can be applied in adult educations, to transform the learners' way of learning through the critical reflections, validating contested beliefs, debating, taking action upon the results of its reflection, and apply critical reasoning on the results of reflective process itself (K. P. King, 2007; Mezirow, 1991, 2000).

Neither conformative, nor reformative, transformational learning comprises values, beliefs, the assumption that guide the learners in interpreting the external environment that can be disruptive. This disruption comes from the frustration of the liminality state (Balsiger *et al.*, 2017). Liminality is the condition where the learner is placed half away from ambiguity and disorientation. Part of the academia has described the transformative potential of learning as a way to juxtapose power and discourse, like in the case of Brookfield (2000); another part sees transformation as a way to drive emancipation. In general, transformational learning implies a dramatic shift that alters the thought, feelings and actions of the learners, without losing the objectivity that is essential espe-

---

[3] In this section, diverse types of learning will be presented and discussed. The selection of the type of learning has been established focused on the most applied learning techniques as found in Evans (2019). For the sake of completeness, among the low priority approaches in sustainability teaching there are case studies, discussion-based learning, learning communities and writing-intensive learning. With a medium priority there are: reflexive learning, critical interpretation of text, service learning, internships, research-based learning, and creative work. The pedagogical approaches with a high priority are project/problem-based learning, active learning, cooperative learning, experiential learning, integrative learning.

[4] Another definition of transformative learning is provided by O'Sullivan "transformative learning involves experiencing a deep, structural shift in basic premises of thought, feelings, and actions. It is a shift in consciousness that dramatically and permanently alters our way of being in the world. This shift includes our understanding of ourselves and our self-locations and our relationships with other humans and with the natural world. It also involves our understanding of power relations in interlocking structures of class, race, and gender, our body awareness, our visions of alternative approaches to living, and our sense of possibilities for social justice, peace and personal joy" (O'Sullivan, Morrell, & O'Connor, 2002, p. XVII).

cially in sustainability science (Sterling, 2011; Sterling & Thomas, 2006).

Following a systemic view of learning applied to ESD, the purpose and the scope of such learning is about personal transformation in contribution to systemic change, which can be achieved through the action-oriented process. The teaching facilitates such actions, and the meaning is co-created through interactions of the learners in groups. Complex real-world learning environment is used as a basis for solve problems, and the educator should establish learning objectives that are in line with self-evaluation and critical support (König, 2015).

The outcome of transformational learning experience can be retrieved in the words of who states:

"*The reflection on transformative action points to the importance of community. In a physically, virtually, socially, politically, or culturally defined community, learners find causes that concern them both individually and collectively. It evokes the lifelong learning perspective recognizing nonformal and informal learning throughout the life of an individual. Therefore, transformative actions for sustainability can also be seen as an example of active citizenship*".

(Salonen & Siirilä, 2019, p. 1971)

2.3.2. From Sage on the Stage to Guide on the Side

Alison King, in 1993 titles her paper published on the journal College Teaching as "*From Sage on the Stage to Guide on the Side*". Although two decades have passed, King's paper is still relevant for transformational learning, especially for the transformation of the educator. She critiques the transmittal model of learning, the idea according to which the learners are empty boxes that need to be filled with content. In this way, the engagement of the learners is almost inexistent, and the type of learning habit is passive.

Contrasting the transmittal model, King affirms:

"*The constructivist model places students at the centre of the process actively-participating in thinking and discussing ideas while making meaning for themselves. And the professor, instead of being the 'sage on the stage', functions as a "guide on the side, 'facilitating learning in less directive ways'"*.

(A. King, 1993, p. 30)

According to King, the role of the educator does not diminish, instead, he or she is involved in facilitating and orienting the learning process through interactions between participants involved in active learning between peers.

According to UNESCO (2017a), educators that want to design learning ob-

jective for promoting ESD should respect a list of critical points, such as to:

– understand sustainable development, SDGs and its topics;
– understand local, national and global challenges linked to SDGs;
– develop and adopt a proper integrative vision of the problems and the challenges of the sustainable development, considering, the social, ecological, economic, cultural dimension of the principles and values, with a look to intergenerational and global justice;
– use disciplinary, interdisciplinary and transdisciplinary perspectives on sustainable development problems (like climate change);
– reflect upon the contribution of his/her specific area of expertise for the sustainable development and the role that he/she wants to play, even included envisioning change;
– reflect on the role of formal, non-formal and informal learning to be applied in class;
– understand cultural diversity, gender quality, social justice, environmental protection and personal development as an integral part of the ESD and think about the way through which he/she can deliver these messages;
– adopt transformative pedagogies that should be targeted to promote active-learning, collaborative learning, systemic, creative and innovative processes to be replicated by learners in their local communities and daily lives;
– act himself/herself as an agent of change to start a progressive organisational learning process inside the universities;
– identify local learning opportunities to entail future collaborations with other organisations;
– evaluate and establish the role of the soft skills of sustainability education and the learning outcomes linked explicitly to the ESD.

Starting from these assumptions, more considerations can be made when it comes to shifting from a theoretically based model of the learning objective for educators to the practical field of the business and management education. In Table 2.4, there is the proposal of a summary of the challenges and difficulties required to translate the learning objective for educators to business and management courses.

Table 2.4. – *A critique of the learning objective for educators applied to business and management ESD courses*

Learning objectives for educators in business and management
• Understanding and presenting the role of business in society without focusing only on SDG 8-9-12.
• Acquire the ability to be informed about at least, local and national conditions in terms of sustainable development, and to be open-minded in finding other sources of information to address question coming from international students (for instance, in international courses).
• Design a specific way for delivering knowledge about SDGs that can start from an organisational viewpoint (like for instance, what are the companies causing those problems …? Or how the company is acting to solve a specific problem).
• Providing an external or tailor-made source of knowledge for multidisciplinary contents that can take the form of glossary or recorded video with definitions. The student must be pushed to learn a necessary element of other disciplines to acquire credibility in the way he/she will develop plans/scenarios. The educator can provide examples of job positions where diverse types of knowledge are appreciated and useful: i.e. sustainability reporting editor should know the basics of public communication theory, social accounting, and specific ontology needed for environmental communication.
• No one should be forced, as educators, to do ESD. Nevertheless, when the choice has been made, then, it is beneficial to reflect upon how orienting private interests of the educator (like research projects, or scientific publications) towards a common goal. In this way, the educator acquires more credibility when he/she provides to the class a source of knowledge that he/she has contributed to create.
• Respect as much as he/she could cultural diversity when presenting wicked problems (for instance, talking about modern slavery/forced marriage to an international class implies the risk of touching others' culture sensitivity). The same applies to all the other component that integrate ESD. For instance, avoiding gender language bias, or to pay attention to being inclusive when he/she comes defining sex/gender/ethnicity etc.
• Consider dedicating part of the syllabus to engage students in active learning, collaborative learning, systemic, creative, and innovative processes, balancing efforts, and the available time to dedicate to such active learning programmes.
• Be involved in green offices or sustainability committee of the university can be a way of acting.
• Strengthening partnership with local organisations will help the lecturer to provide fresh business cases and corporate experiences, as well as the students can be pushed to evaluate the existence of learning opportunities as a useful way to invest their spare time.
• Try to link learning outcomes for sustainability to soft skills needed, considering that managerial soft skills are among the most useful to guarantee feasibility in the phase of planning, developing, testing business solutions for sustainability problems.

Source: elaborated by the author from UNESCO (2017), starting from a point-by-point analysis of the educators learning outcomes list.

2.3.3. Student-centred learning

Student-centred learning promotes autonomy and the active engagement of learners, more than a passive transfer of knowledge, like in the case of transmittal education. All the preliminary information and experiences play the role of a starting point for learners training. At the core of this approach, there is the need to establish a sort of self-reflection of the learner upon his/her previous knowledge, about how he/she is managing this new way of learning and start a monitoring process of the learning experience. Educators have the role of facilitating the self-reflection and guiding, as we have seen before, learners in their learning experience (Matthias Barth, 2013, 2016; Matthias Barth & Michelsen, 2013).

2.3.4. Active learning

During an active learning experience, learners are concretely involved in actions and reflect on their experiences, both in terms of learning processes achieved or not completely achieved and in terms of personal experience. Action learning relies on the ground breaking work of Kolb's theory of experiential learning (Kolb, Boyatzis, & Mainemelis, 2001). Having practical experience, observe and reflecting, trying to generalize the findings and apply them in different contexts, are the main steps of active learning. Herein these experiences, the educator is involved in building a learning environment (a course or a lecture) that is designed to create experiences and to support the development of reflexive thinking in learners.

Among the pedagogical techniques used for active learning, there are different options that an educator could implement according to his/her available resources. In King's paper (1993), there is a summary of options that can be used mainly for boosting activities in class. Other instructional approaches can be used in case of more available time, space and that works better for large or small classes like, for instance, group-works, project-based learning, campaigning. An initial review of the learning activities that can be incorporated during a lecture on sustainability in business and management courses is available in Table 2.5.

Table 2.5. – *Examples of student activities that can be run in class*

Student activity	Examples of application in sustainability-oriented courses of business and management classes
Think-pair-share	Students are called to start thinking individually to a question posed by the educator, and then they can share in pair their idea. This can be applied to SDGs. "What should be the most important SDG for your country?"
Generating examples	Make an example of a past law that today can be considered unethical.
Developing scenarios	Apply a particular ethical concept into a scenario, like cheating during the exam, committing accounting fraud.
Concept mapping	Represent through mapping how a company defines its commitment towards sustainable development in corporate communication.
Flowcharting	Outline the process of editing a sustainability reporting.
Predicting	Considering what happens in a well-known context if something disruptive alters a specific situation. Like in the case of changes in the law (like for instance the introduction of the non-financial disclosure directive).
Developing rebuttals	Present to the class a negative statement or an ethical dilemma, or a quote taken from the speech of famous CEO on a sustainability dilemma and ask the class to argue for and against.
Constructing tables/graphs	Compare the environmental performance of two competing companies over three years.
Analogical thinking	Students propose a metaphor or an analogy using a specific principle. Apply the materiality principles to a specific company or identify material argument affecting a business industry.
Problem posing	Students are called to propose and share lists of sustainability problem affecting a company or a business sector.
Developing critiques	Students are called to elaborate a critique about SDGs instrumentalization.
Pair summarising/checking	In pair, reconstruct what has been presented during a lecture with a check and corrections that must be done collaboratively.

Source: elaborated by the author from King (1993) and adapted to sustainability education purposed in business and management classes.

2.3.5. Cooperative learning

With cooperative learning, the role of the presence of a single source of knowledge is minimised, making sure that even the contributions made by stu-

dents can be beneficial for their learning outcome. Planning the teaching activity in cooperative learning requires participants to exchange ideas and information, organise themselves, talk more, and try to overcome barriers that are often present in a multicultural class (Wiek *et al.*, 2013). Among the most influential sociologists and psychologists who have contributed to the development of this type of learning are Dewey, Lewin and Deutsch (Johnson, Johnson, Holubec, & Holubec, 1994). Dewey contributed in terms of active education and in the search for an educational way that avoids sterile teaching notions, but that can support students to grow by becoming conscious and responsible active citizens. Lewin contributed to the development of cooperative learning mainly through his theories on group dynamics and the psychology of organisations. Deutsch, on the other hand, thanks to his studies on social interdependence has collaborated in the development of cooperative learning in analysing how students can encourage each other and contribute to mutual learning.

Especially when we try to apply cooperative learning in intercultural classes, we should consider that not all the cultures have the same attitude toward uncertain conditions (Hofstede, 1986). Furthermore, this is valid for sustainability teaching. Liminality, as an example, requires accepting that there is not a particular solution, but there is the risk of failure and the pressure of a rush to solve a wicked problem. The carbon emissions problem represents another example. A lecturer cannot present state of the art about carbon emissions, without clarifying that the wealthiest one per cent of the world's population is responsible for more than twice as much carbon pollution as the 3.1 billion people who made up the poorest half of humanity during a critical 25-year period of unprecedented emissions growth (OXFAM, 2020). In that report, there is evidence of how different populations contribute to global warming, through their consumptions, giving an idea on how the mix of populations has changed from 1990 to 2015, in terms of the distribution of income and associated increased in consumptions and emissions.

Another meaningful example is represented by teaching modern slavery. Many papers and special issues have been published and are planned for the next years on the topic of modern slavery. Modern slavery is inevitably linked to multiculturalism, and when the educators provide first-hand knowledge on that wicked problem, there is a high probability that in a multicultural class someone is representing the voice of that country/culture. On that sense, involving the students in narrating their point of view, or contesting, debating the data that the educator shows is part of the actions that can be run in class.

Educators in cooperative learning should understand that their roles will be different if compared to a traditional education case. At first, educators beco-

me facilitators in observing what students are doing, and they must accept that there will be reciprocal learning. An example of this can be when the educator is called to provide support to students working in multicultural groups, where the exchange of knowledge between the participants constitutes itself a learning outcome. This is the case, for instance of the group analysing the SDGs over different countries, or when a wicked problem affects primarily one country from where someone is coming.

A second implication for educators is to design activities that can help a positive feeling inside the group, because positive feelings like empathy or identification build an intense sense of commitment in students.

Thirdly, when the educator is called to design an operative learning activity, he/she should consider that especially in cases like project-based learning, there will always be a progressive increase in the case difficulties. Especially when students are approaching the deadline for submitting their work or the exam day, the workload needed to complete the assignment, or the project will be massive. As fourth, the educator should also consider to include a moment of reflection with the students to guide them in understanding which areas of the learning process have been unfinished or left behind.

In comparative learning, the promotion of critical thinking, the promotion of students' creativity and the construction of a mindset for future leaders is of paramount importance. The educator should reorganise the way through each content, and the knowledge is delivered to the students, and how-to students are evaluated as well. The cooperative learning experience can also be useful as a way to include disadvantaged students in students' work groups, because this type of learning implies that the members of the group set up their standard rules and acceptance of all the participants included people with learning disabilities.

2.3.6. Participatory learning within experiential learning

As supported by Patricia Werhane in her work of 2008, the opportunistic and individualistic mental models of business students need to be challenged by more collaborative ones (Werhane, 2008). As an example of different models of active learning, there are more complex activities that can be labelled under other two slightly unusual types of learning, such as experiential learning or problem-based learning.

In problem-centred or problem-based learning, real-world opportunities become part of the learning experience (Ortiz & Huber-Heim, 2017). The course or the lecture designed under these two different learning scheme needs to challenge the traditional layout of the course because they can imply to in-

volve activities that are physically placed outdoor and that are designed to ask students to participate actively in running such projects (Lugg, 2007). This type of activities can require the learners to develop different types of competencies such as:

– strategic knowledge that is useful to integrate systemic and anticipatory competences useful to deal with different opinions perspectives and strategies;
– the practical knowledge that is necessary for linking knowledge and action especially in sustainability problems and finally collaboration that means to acquire the skills useful to collaborate, cooperate, and engage with experts and other stakeholders outside of academia, like for instance consultants, entrepreneurs, associations, municipalities (Y. Cho & Brown, 2013; Lehmann, Christensen, Du, & Thrane, 2008).

To establish this type of learning activity, the educators should design inter-organisational activities with external institutions, focused on solving a problem or on running a project in another learning environment that is not the class or the university. Outdoor experiences [5] are the pillar of sustainability education as they foster positive attitudes, self-perceptions, and interpersonal skills:

> "*It has become fundamentally clear that sustainable education training in outdoor recreation rests on the curricula planners and instructors who teach in this exciting and rapidly growing area. It has also become evident that the future of this field is untenable should teachers in post-secondary outdoor recreation programs not recognize and act on their responsibility to train sustainable leaders for tomorrow*".
> (O'Connell, Potter, Curthoys, Dyment, & Cuthbertson, 2005, p. 91)

There is a risk that the educator must consider in outdoor education, mainly when the activity is run within multicultural classes, that is the lack of knowledge of the territory or cultural behaviour that an incoming student or an Erasmus student could experience. To overcome such problem, the educator could design the class activities as a group activity, so to create a multicultural group. By having a multicultural group, other cultures' perspectives can offer new knowledge on a problem, with other solutions (maybe already accepted in those native countries).

A participatory learning activity aims at developing independent thinking, emphasised using a collaborative way such as the ones that we have already explored for cooperative learning. As an example, one can think the inside pro-

---

[5] Outdoor training activities have been tremendously impacted by COVID-19 outbreaks and this should be considered when reading this essay. Alternative virtual tools to increase and activate the learning of students during the time of social distancing have been discussed under the *interactivity* section.

ject-based learning, we can have social, or team or group organised learning, the learning of the problem and how the project is carried out by members and the learning of the topic and how the theory matches the practice (Edwards *et al.*, 2020). However, the study of Lehman *et al.* (2008) on project-based learning affirms how important is to move from the problem side called "know-how" to give more emphasis to "know who", "know what" and "know why".

2.3.7. Transformational leadership

Transformational leadership theory regards how the leader behaves organisationally and to develop strategies to achieve a foreseen scenario. In transformational leadership, business ethics, stakeholder's management, and CSR are vigorously implemented into a business mindset that is transformed, from a business-as-usual perspective to a strong sustainability orientation. The leaders work to increase employee self-esteem, confidence and effectiveness applying principles of justice, fairness, and inclusion (Filho *et al.*, 2018). Transformational leadership should be the results of an ESD activity in business and management courses towards sustainability issues that must be systemic (André, 2020; Painter-Morland, Sabet, Molthan-Hill, Goworek, & de Leeuw, 2015).

Concluding, Corriveau (2020) affirms,

> "*Achieving SDGs will not be an easy task. It involves changing the mindset of current and future managers such that they adopt a global and ethical perspective on their decisions and actions. To this end, leaders must question their values, learn to take other people's views into account in their decisions, be transparent and develop a strong moral ethic. In short, they are expected to become authentic leaders*".
> (Corriveau, 2020, p. 8)

2.4. About the importance of soft skills for future sustainability managers and leaders

UNESCO (2017b) identifies three specific learning objectives for helping educators in designing ESD. The three learning objectives are the cognitive dimension, the socio-emotional dimension, and the behavioural dimension. The cognitive dimension includes the knowledge and the ability to elaborate personal thinking to know better the SDGs and their achievement. The social, emotional dimension includes those skills that lead learners to be able to collaborate, negotiate and communicate SDGs. In addition, learners are called to acquire other skills for self-reflection, values, personal attitude, and motivation

through which they let people to transform themselves. The behavioural dimension describes the capacity of action instead.

There is a widespread consensus about the fact that future citizens should have skills able to let them be actively involved in shaping their future World[6]. Soft skills describe the specific attributes that an individual should have to act and self-organise his/her behaviour in different contexts and complex situations. Soft skills include cognitive elements, affective, intentional, and motivational aspects. Therefore, they represent an interaction between knowledge, capacities, abilities, motivations, and intrinsic personal behaviour. Competences cannot be taught, but learners themselves must develop them. Soft skills can be acquired throughout experiences, actions, and reflections.

Key competencies represent transversal skills that all the learners should have everywhere in the world. Such key competences are transversal, multi-functional and independent by the geographical context and the quality of life of a specific country. Such soft skills should be oriented towards sustainable development.

According to UNESCO (2017b), there are specific groups of soft skills that should be considered by an educator during the design of an ESD:

a) systemic thinking;
b) anticipatory thinking;
c) normative;
d) strategic;
e) collaborative;
f) critical thinking;
g) self-awareness;
h) integrated problem-solving.

---

[6] The OECD (2018) has mapped a huge list of skills and values that matched together will reinforce the acquisition of competences. Such skills are: Adaptability/Flexibility/Adjusment/Agility, Compassion, Conflict resolution, Creativity/Creative thinking/Inventive thinking, Critical-thinking skills, Curiosity, Empathy, Engagement/Communication skills/Collaboration skills, Equality/Equity, Global mindset, Goal orientation and completion (e.g. grit, persistence), Gratitude, Growth mindset, Hope, Human dignity, Identity/Spiritual identity, Integrity, Justice, Manual skills for information and communication technology (related to learning strategies), Manual skills related to the arts and crafts, music, physical education skills needed for the future, Meta-learning skills (including learning to learn skills), Mindfulness, Motivation (e.g. to learn, to contribute to society), Open mindset (to others, new ideas, new experiences), Perspective-taking and cognitive flexibility, Proactiveness, Problem solving skills, Purposefulness, Reflective thinking/Evaluating/Monitoring, Resilience/Stress resistance, Respect (for self, others, including cultural diversity), Responsibility (including locus of control), Risk management, Self-awareness/Self-regulation/Self-control, Self-efficacy/Positive self-orientation, Trust (in self, others, institutions).

Systemic thinking skills are those related to understanding and recognising relationships, analysing a complex system, understanding how different systems are incorporated and related to different scales and conditions.

Anticipatory thinking skills include understanding and evaluating different futures in terms of possibility, probability, and desirability, forecasting personal scenarios for the future, applying, and understanding the precautionary principle and determining the consequences of an action, as well as, the highest amount of possible risks and changes.

Normative skills are the ones related to the ability of understanding and thinking about norms and values that route everyone's actions, acquire the ability to negotiate values, principles, objectives and sustainability targets in a context where conflict of interest and trade-offs, uncertain knowledge and contradictions are commonly present.

Strategic skills regard how to develop and to implement collectively innovative actions that promote sustainability to a local level and in the broader context.

Collaborative skills regard the ability to learn with others and from others; to respect and understand others' needs, perspectives and actions through empathy; to understand and strengthen relationships with others, to develop empathic leadership; conflict resolution skills and collaborative and participating abilities in achieving a shared solution to common problems.

Critical thinking skills are the ones related to reading, contesting, recalling and debating norms, practices, and opinions; reflect over personal values and perceptions, and finally take a firm position on sustainability issues.

Self-awareness skills are the ones that are useful to develop self-reflection about the role of everyone in local communities and the broader society; to evaluate continually and motivating our actions, our feelings, and desires.

Integrated problem-solving skills are to be applied in a different context of problem-solving related to sustainability problems and to have the ability to develop reasonable solutions that should be also inclusive and fair.

Part of the skills mapped above have been based on two seminal works of sustainability science (Wiek *et al.*, 2016; Wiek, Withycombe, & Redman, 2011). These studies have been cited more than 1500 times since their publication, and this is an exceptionally good signal for saying that there is global consensus above them. There is another skill that UNESCO reports together inside the integrated problem-solving, that initially was expressed aside, namely the meta-competence of meaningfully using all the other and integrate them.

Lozano *et al.* (2017) and Evans (2019) have provided fresh insights on the thematic of the soft skills, through providing an extensive review of the litera-

ture and tightening together pedagogical approaches and soft skills that can be achieved using that technique. In Lozano *et al.* (2017), they are considered as relevant: interdisciplinary work; justice, responsibility, and ethics; empathy and change of perspective; communication and use of media; personal involvement; assessment and evaluation; tolerance for ambiguity and uncertainty. In the synthesis provided by UNESCO, most of these additional skills are merged. Furthermore, in the recent work of Evans (2019), the author concludes that the other two essential skills are lacking: *transdisciplinarity* and *creativity*.

Recent studies indeed are providing the need to develop additional skills in business schools and management courses when it comes to teaching sustainability science. Recently, Sayers *et al.* (2020) affirmed that Science, Technologies, Engineering and Math (STEM) competencies are noticeably absent from academic literature and business curricula, and they support the thesis according to which *STEM-based sustainability* can enhance management student's sustainability literacy and cognitive ability.

Cottafava *et al.* (2019) have also run a workshop where the focus has been to educate future sustainability leaders. During the study, they have stressed the importance of *managerial* skills as a set of a toolbox that can help students to make concrete ideas and projects (Abou-Warda, 2014). Authors emphasize the Business Model Canvas (Osterwalder & Pigneur, 2010), the Ishikawa's fishbone (1990), pitching skills, among others.

In this chapter, an overview of the transformation required by ESD has been presented. These transformations happen to different level systematically connected: at a macro level, changes are required in terms of developing a sustainability-oriented university; at a meso level, changes can occur in the way sustainability topics are provided in courses, classes or single lecture; but the most relevant changes happen at a micro-level pushing both the educators and the learners in inevitably change their relationships. Without the intent of providing a full understanding of the literature on transformation learning for sustainability in business and management course, Scopus reports 320 documents matching the search criteria: "transformative learning" AND "business" AND "sustainability" limited to business, management and accounting research field. Figure 2.3 reports the overall networks of keywords built upon the occurrences between keywords and abstracts of such papers. Sustainability, sustainable development, and transformational learning are all tightened together with curricula transformation and planning. Other clusters emerge such as pedagogies, types of learning, university settings, skills, educators' profiles, reflexivity, and critical reflections. These pieces of evidence confirm that all these items should be considered while designing an ESD experience.

Figure 2.3. – *Network visualization of the map of the interrelationships between key-
words and abstracts of the selected papers*
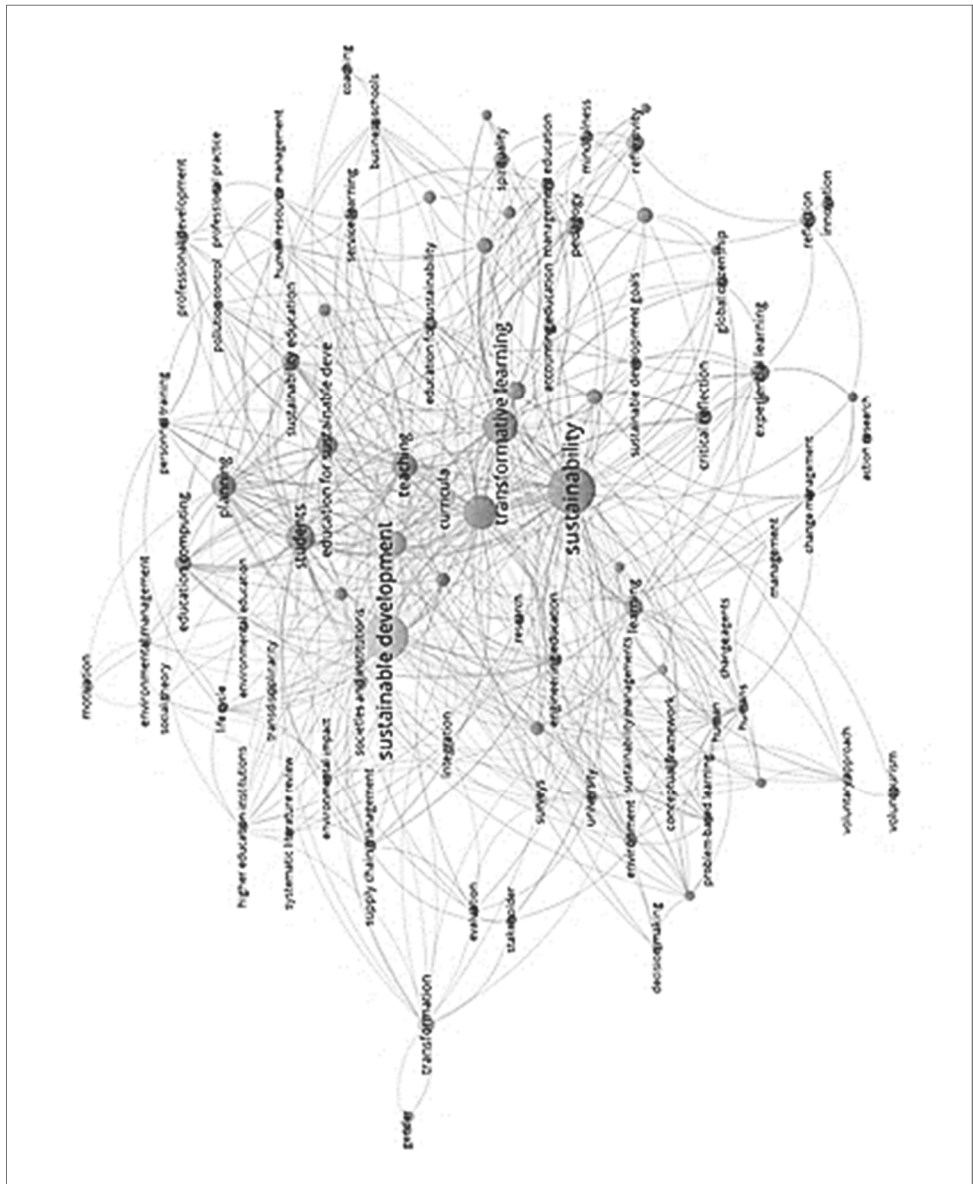
Source: elaborated by the author using VOSviewer.

Chapter 3

Research design and methodological implications

3.1. Autoethnography as a suitable research method

While from 2018, the numbers of papers and publications on innovative methodologies to support ESD are rising, works on barriers, limitations, risks, and opportunities are rare, primarily if they have been written with an educator centred perspective. Case studies are the object of most of the recent literature on ESD activities, while few works adopt a sort of the educator-centred point of view. The scope of this work is *to provide a complete narrative of the journey lived by an educator, I, in designing, implementing, and reflecting over the results achieved through an ESD*.

As presented in the previous chapters, the literature on ESD is constantly growing, boosted by an increasing attention that the entire systems of education are bringing to support and adopt SDGs. Among the studies previously presented, there is a still a lack of studies using epistemology, in narrating and linking togethers antecedents, facts, and consequences. What it emerges, is, in fact, the predominance of studies, cross-case, single cases, survey that do not explore the reflexive dimension of developing, realising and analysing an ESD with the perspective of the educator.

In addition, about the explanatory programs, the research design that could probably fit with the intent of this study, the so-called research gap, should consider maintaining a certain concrete aim, more than abstraction. At the same time, the thick description of an event could be not sufficient to bring a reflexive intent, so in the research design it should be considered also a pragmatic intent typical of experimentations, merged with the syntactic contributions of internal narrative and discourse.

Clarified that the research approach should merge the philosophical worldview of transformative learning as a tool to create change in traditional education of business and management classes, the selection of the research design should consider the availability of data such as the meta-level of di-

scourse analysis that is applied usually by ethnographers.

Three specific research streams can be adopted to support an autobiographic research approach: autobiography, personal narratives or accounts, and autoethnography (Samkin & Schneider, 2014). Autobiographic researches have been validated in business and management, and they have been used in the past by Mitroff when he critiqued business schools that fail to prepare their students for the ethical management of complex problems (Mitroff, 2011). Unfortunately, autobiographic papers sum up together different managers' perspectives or are not seen contextualised into a specific geographical environment. Autobiographies are commonly accepted in social sciences, but they are considered limited in business and accounting research.

Another research methodology is the ones of personal narratives. Personal narratives involve the researcher in evoking stories focused on his/her subjective experiences through narratives focused explicitly on academic, research, and personal lives. With their evocative sound, personal narratives are usually non-fictional but rarely relies on dialogues and more on personal reflection (Samkin & Schneider, 2014; Schneider, 2015).

Autoethnography is indeed included among the new accepted methodological approach for studying business, management, and accounting (Samkin & Schneider, 2014). With their intent of being experiences aimed at understanding the cultural impact of an action, studies adopting autoethnographies are retrospective narratives where the researcher becomes the storyteller. Storytelling includes the dialogues with students, making choices and interactions with others, that in the specific case will be represented by students frequenting one of my class and other stakeholders, mainly entrepreneurs of the local area and university managers. Various other artefacts can be used in enhancing storytelling, such as photographs, documents, emails, and drawings and everything that can represent a source of knowledge about the event.

Kathryn Haynes is among the few scholars having shaped and validated the role of autoethnography in management and accounting (Haynes, 2006, 2011, 2017). In particular, she asks for attention when it comes to developing research that is based on autoethnography. Traditionally, social sciences strongly rely on reliability, generalizability, and validity, that in the case of autoethnography should be considered more for, factual evidence, coherence and uniqueness of interpretation (Ellis, Adams, & Bochner, 2011). For these essential features, autoethnography can represent a valid option to illustrate and narrate the case of an ESD, using the educator perspective.

The power of the choice of this methodology relies mainly on the importance of connecting the context, which can be cultural, social and political to the personal narrative of the researcher (Haynes, 2017). Specifically, in the re-

search design, it should consider that there are relevant interlinks between the self (auto), the socio/cultural (ethno) and the form of representation (graphic). According to Haynes (2017, p. 217):

> "*It is for these reasons that autoethnography can be considered an epistemological and methodological approach, rather than simply a research method or research outcome. It is a way of knowing and a way of researching, informed by valuing the subjective in conjunction with the social. It is introspective, yet analytical; personal, yet social. It goes beyond the use of autoethnographic text or narrative as a method or in research writing, to a more fundamental philosophy in research design, practice and outcomes, which values and creates intersubjective social knowledge*".

Autoethnography is also accepted in describing the changes happening in academia (concerning business schools or business curricula), and, more in the specific, the changes and the challenges affecting the university system. In Samkin and Schneider (2014), authors list these challenges as large class sizes; students from disadvantaged educational backgrounds; lack of teaching resources; low salaries; threats to academic freedom; and complying with government transformation and growth strategies. Most of these challenges are more crucial when they are applied in the context of ESD, as discussed before, because they constitute ESD fundamental pillars (inclusion, academic freedom, lack of investment). Consequently, there is a suitable coherence between the research design selected and the research question.

Several forms can be applied into a research framework oriented towards autoethnography: evocative, analytical, critical, interpretive, performative, embodied and poetic (Haynes, 2017). In the specific case herein discuss, the analytical and critical forms have a perfect fit. According to Haynes (2017), analytical forms are suitable for narrating experimentations, and critical forms are suitable to address ethical responsibilities, that in the case is the role of the educator to be an active actor to support sustainable development in societies. The other forms could be out from the scope of this study as they are usually more focused on emotions and feelings or performances. As the ESD that will be presented here actively involve an entire class of bachelor students, the suitability of other forms of autoethnography can be compromised.

Using an epistemological perspective, the author that is the researcher involved as the leading actor of the research should not limit its narrative to his/her private perspective, but he/she must include, in the narrative, the social dimension, the professional context and the organisational setting. An analysis deeply grounded on autoethnography shifts its focus from the mere narrative of the personal/professional behaviour to investigate how that behaviour chan-

ged or should change when the contextual variables change. The researcher is part of the phenomenon under analysis, and this could represent a negative implication for those invoking for the research neutrality. As clarified by Gariglio, to let the research community capable to support and accept the results of an autoethnography-based project, the researcher must provide a self-reflexive discourse (Gariglio, 2017).

As clarified above, this study could find inspiration from analytical and critical forms. Indeed, a specific feature coming from evocative form is taken, that pertains to the design study. For instance, in the case of analytical autoethnographies the researcher designs the study to test/validate one, or more than one research question. The researcher assumes the status of full member using the traditional tools of such a methodology. In the case of evocative, the research case is analysed ex-post and the epistemological unit is not created for the sake of the study itself. Specifically, the database is built upon the depiction and reconstruction of the experiences lived in the past through a writing with biographical traits (starting from impressive subjective experiences). The researcher writes from his or her natural role (without taking on an *ad-hoc* role for research) and from their own biographical experience.

3.2. The research context

The University of Turin (UniTo) is a large Italian public university, founded in 1440, and in addition to these historical roots, it has trained the winners of three Nobel Prizes and two presidents of Italy. Located in Piedmont, UniTo is a city within the city of Torino, with 120 buildings in different areas of the city, as well as in key urban locations of the entire region. It includes a botanical garden and five university museums, and it is responsible for half of the medical services of the entire region through its university hospital. Nearly 83,000 students, professors, researchers, and staff members engage with UniTo each day. Teaching goes on in all its 27 departments, and it researches in all academic fields (excluding engineering and architecture, which are taken by the local polytechnic university).

UniTo is a relevant case study, because it has a long history of commitment towards sustainability, as it reports its sustainability performance from the academic year 2013/2014. In 2018, UniTo gained the first spot in the ministerial public engagement ranking, among which there is the engagement of students in alternative teaching method (like Living Lab, open workshops). The commitment of UniTo to become a strong-sustainability oriented university has become evident in 2016 when the university governance has launched its Green Office.

The Green Office is organised as a bottom-up activity coordinated with a multi-stakeholder arrangement that includes professors, university's managers, and students. Among its duties there is the elaboration of the Sustainability Strategy every two years, along with managing working groups on Green Public Procurement, Food, Energy, Mobility, Waste and two transversal groups about Climate Change and Communication and Public Engagement. That groups interact with the Italian network of the sustainability-oriented universities named RUS. While in RUS there is an education working group dedicated to the analysis of the ESD offer provided by Italian universities, in UniTo, this working group is going to be created by the end of 2020. Many contributors of the Green Office have a double role and they are not employed full-time in its activities. For instance, in 2020, 17 professors and researchers plus 18 of its technical and administrative staff members have worked for the Green Office [1].

Herein UniTo, the Department of Management in 2017/2018 accounted for 9.247 officially enrolled students among which there were 859 international students (Erasmus students excluded); for the academic year 2018/2019, the data showed 9.081 enrolled and 823 international students (data retrieved through queries on the private access to the University of Turin management dashboard called Pentaho in October 2020). That data decrease for the effect of enrollment policies, that were needed to lower the ratio between professors and students, that has been one of the highest in UniTo. Due to this number, the Department of Management is the first department in terms of students enrolled.

The ESD activity that will be presented has been conducted herein the course called Risk Management and Green Business Strategy (MAN0089), and in the module of *Green Business Strategy,* a course of the third year, first-trimester. That bachelor was ending in terms of the syllabus in the academic year 2018/2019, and the academic coordinator was confident that class would have been the proper place to experiment with an innovative pedagogy. For the three years before, I [2] had the pleasure to teach the same subject on the previous cohort, using a traditional instructor-students pedagogy, sometimes enriched by case analysis and multimedia sources, but usually, schedule as a transmittal lecture.

That specific bachelor's degree in Business and Management was entirely taught in English (as a specific degree in *Economia Aziendale*), and most Erasmus students and international students used to enrol in that course for its sui-

---

[1] According to the latest data collected for the GreenMetric 2020, the involvement of the personnel greatly varies, from 2% of the full-time employment (FTE) to 100% of the FTE of the energy manager or the mobility manager.

[2] It is commonly accepted in autoethnography to recur in using the first person I, to give to the reader the sense of storytelling.

tability. The Department of Management is appreciated for international students and in 2017/2018, the 859 international students represented 68 different countries, and in 2018/2019 that number was increased to 70 countries for 823 international students. Providing evidence on the composition of the class in terms of international students enrolled is fundamental to give the idea of the multiculturalism depicting the contextual background on where the ESD activity has been run.

To describe the context in relation with the SDGs, the so-called SDGs score (SDG index database accessed in October 2020[3]) is a useful way of describing the overall composition of the international classes[4] at the Department of Management. The SDGs score is not created for universities, but it can be used to describe the level of sustainable development achieved in specific countries. It is a rank out of 100 that indicates if all SDGs have been achieved in a particular country. The overall score measures a country's real progress towards achieving all 17 SDGs.

The score can be implemented in universities, as a measure that can be adopted to describe the international context of the international students joining the Department of Management. Here, I invoke the use of such core as a proxy for the multicultural orientation of a class. For instance, having a class composed entirely by Nigerian students is different from having a class mostly represented by Chinese or Americans or Europeans.

This is a crucial aspect of sustainability-oriented courses because the multiculturalism of a class affects, the way through which sustainability topics are presented.

---

[3] The database is available in Excel format here https://dashboards.sdgindex.org and the complete methodology and the selection of the KPIs is reported in the publication: Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G., Woelm, F. (2020), *The Sustainable Development Goals and COVID-19. Sustainable Development Report 2020*, Cambridge: Cambridge University Press.

[4] The excursus on the analysis of the background of international students is due mainly to explain the implications for the educators in setting up a learning programme dedicated to home students versus an inclusive education. For instance, in De Vita (2001) different learning style profile exhibited by students in a multicultural class of international business management, is compared with their cultural conditioning and the culture of home students. In Ryan (2005), indeed, the presence of international students become an important source of expertise for home students, and it is a factor to be considered by the lecturers in creating supportive learning environment. While measures of the learning style exist, like the Felder and Soloman's Index of Learning Styles, the same for measuring the international orientation of a class in relation to the level of sustainable development reached by different countries, is still in its development. As such, the index here proposed should be considered as an initial proposition.

In this section, a brand-new index to explain the SDGs background of the international students can be expressed for the entire Department and specifically for the MAN0089 class as:

$$SDGs\ background\ class\ score = \frac{\sum_{i=1}^{n}(S_i * SDG_i)}{\sum_{i=1}^{n} S_i}$$

Where S_i is the number of the students of country i and where SDG_i is the country score provided by the SDG index database. Table 3.1 reports the SDGs background class score of the overall Department of Management. Unfortunately, the SDGs score considered is the one of 2020, even it would have been backdated to be linear to the year of the ESD. The score of 71,15[5] refers to a position equal to 65 out of 166 that in 2020 is represented by Kazakhstan, so this is to say that in terms of sustainable development, the composition of an international class of the Department of Management can be seen as people coming from a country with the same development level of Kazakhstan.

Despite having few changes from 2017/2018 and 2018/2019, they do not affect the overall distribution of students per country. This data has a practical implication in terms of how to change educations and pedagogies concerning the students' background towards specific sustainability topics and themes. Understanding the composition of the class before starting is useful to target examples and cases, as well as to design the entire ESD.

Table 3.1. – *SDGs background class score*

Academic year	Department of Management international students	Percentage of international students on total students	SDGs background class score for international students	Age (average in years)
2017/2018	859	9,29%	71,15	n.a.
2018/2019	823	9,06%	71,16	20

Source: elaborated by the author.

As it emerges from the previous Table 3.1, the ratio of international students frequenting the courses of the Department of Management was 9,29% for the academic year 2017/2018 and was of 9,06% for 2018/2019. Going more in-

---

[5] Italy is placed in the 30th position with a score of 77,01.

depth inside the case of the ESD activity, the class where the ESD has taken place was composed by a percentage of international students equal to 49%, that is likely to say that one student out of two was international. The number of international students involved represented roughly 10% of all the international students joining activities at the Department of Management. The same course of the previous years accounted for 47% of international students, a clear sign that the multicultural orientation of the class.

Another information, regarding the class composition, is that 49% of the students were female, in line with the data of the same cohort, which was equal to 47%. During the previous year course, used as a benchmarking, the percentage of female was 46%, almost identical.

The overall number of students joining MAN0089 course in 2018/2019 was equal to 176 students, while during the previous cohort, 2017/2018 the number of students frequenting the class was of 124 (roughly 30% less than during the cohort when the experiment was run).

According to Table 3.2 that reports a summary of the information commented here, we should consider that half of the class was at an SDG score of 77,01 (that is the SDG score attributed to Italy), but the other half was distributed over different countries. The SDGs background class score is equal to 69,59 that in the rank is the 77th position, now occupied by El Salvador. This is to say that the part of the class represented by international students, as an average, comes from countries where the sustainable development conditions are considerably different if compared to their Italians classmates. Consequently, the way to address sustainability issues must be targeted, having in mind that those students belong to countries where sustainability issues are perceived as more critical and evident in these students' mindsets.

Table 3.2. – *Synthesis of the data for MAN0089 in two academic years*

Academic year	Number of students	Percentage of international students	Percentage of female	SDGs background class score for international students
2017/2018	124	47%	46%	n.a.
2018/2019	176	49%	49%	69,59

Source: elaborated by the author.

Finally, the duration of the course has been equal in both cases to 21 hours of lectures that is equivalent to 3 ECTS. Usually, the duration of the single lecture was equal to 3 hours of length. However, in the case of the ESD experiment, I have changed the distribution of the lectures to have three lectures delivering the theoretical insights through a flipped class model and three lectures of active learning activities. In general, there are enough conditions to say that the experiment runs over a sort of counterfactual verification (Costanzo & MacKay, 2009).

3.3. The design of the experiment [6]

The control groups

During the academic year 2017/2018, theoretical lectures occupied at least 15 hours out of 21, and for the six remaining hours, the students were called to approach case studies to deliver a presentation on the green business strategy adopted by international companies. Usually, groups were free to decide which sources of data to consult and how to arrange the presentation, that was mainly based on clarity, quality of the content, precision, use of the argumentation theory and inclusion of all the groups' member during the final speech.

The content of the lecture was distributed as in Table 3.3, and the use of multimedia sources is clarified in the same table. The students were evaluated for ten marks according to their final presentation, ten marks on weekly assignment created to help them in building up their final presentation and for ten marks based on a written examination (equal to 30 marks out of 30). The written examination was based on three essay-type questions mainly studied to evaluate the ability of the students in recognising the application of sustainable development principles and on the strategies implemented by multi-national companies. According to the model of Anderson and Krathwohl (2001), the knowledge tested in the control group, which assumes a sort of traditional pedagogy with few case studies for active learning, was essentially the *factual knowledge* and the *conceptual knowledge*. Factual knowledge because students were called to know the basic of sustainable development. Conceptual knowledge because in other cases, they have been called to remember and mnemonically recall definitions and recognize the application of such definitions in practical cases. For instance, most of the questions were: define and comment,

---

[6] For this experiment, it is easier to call the students frequenting the course during the academic year 2017/2018 as control group, while students frequenting the course during the ESD in 2018/2019 as treatment group.

recognize in the text and classify, or define and explain data published in tables (sometimes applying theoretical concepts).

The ability to work in a group and to speak in public was tested during the final presentation. For that specific activity, the *procedural knowledge* was tested, such as drafting the presentation, analysing relevant information and presenting them. During the class, students had proper time to arrange their presentations, but within the limit of those six hours.

Table 3.3. – *Pedagogical approaches for the control group*

MAN0089	**2017/2018**	**Control group**
Topics presented (in the brackets distribution of lectures): Theoretical concepts: Accountability, sustainable development, triple-bottom-line, natural capital, human capital, CSR, Creation of Shared Value, stakeholder theory, stakeholder engagement. Sustainable business strategy: Bottom-of-Pyramid business models, Biomimicry, Eco-innovations, closed-loop, industrial symbiosis, circular economy, green products. Social and Environmental Accounting and Reporting: ethical ratings, sustainability reporting analysis, Global Reporting Initiative G4 guidelines. Analysis of company communications on green business strategy.		
Principal learning outcomes (original statement reported on the slides): – In the context of the complex interaction of economic, social and environmental sustainability, a student should: – Understand the increasing drive for organisations to recognise and manage all material sustainability-related risks and opportunities. – The major roles accounting can play in embedding considerations of sustainability into organisational strategy and operations decision-making. – The importance of the business case in embedding sustainability. – Identify the differences between green and ethical strategies. – Suggest and choose the most suitable options between different green strategies. – Understand the importance of managing the relationship with the stakeholders as a source of competitive advantage.		
Teaching resources: slides and external resources (infographics, videos, guidelines)		
The average score reached by students at the end of the module: 27,28 (out of 30)		

Source: elaborated by the author.

The treatment groups

The experiment of the introduction of an ESD activity in the bachelor's de-

gree has started during the summer of 2018 when I have officially requested permission to conduct such an innovative learning experience. The design of the experiment started from the literature review, that has been extensively presented before, while the second step has been represented by the introduction of the project-based learning module and the rescheduling of the part of the syllabus.

With the intent of experimenting on how to design an ESD based on the development of sustainability projects, my initial choice was to guarantee students to have at least the same level of knowledge transmitted during the theoretical lecture that I have provided to the control group. This is because many studies have demonstrated that there is a lack of conceptual knowledge about ESD, both multidisciplinary, and interdisciplinary. I have arranged the seven lectures available in order to have three theoretical lectures enriched by flipped classes pedagogies, three lectures where I have provided a sort of clinic for students to support them in developing their project, solving issues or providing advice. During the last lecture, the treatment groups provided me with their final presentation of their project.

I have decided to select flipped class, for the provision of the theoretical part of the programme, but not all the content has been delivered in such a way, so it has been an embryonic customization of the flipped class pedagogy. Flipped classes are designed to reverse the traditional learning environment. For instance, the control group has acquired knowledge during the classes, and they have dedicated their time to study at home. In the flipped lesson, the treatment group has acquired the content partially during the classes, but also partially at home, having access to additional materials. They have been called to work on that knowledge during the lectures and to apply the knowledge during the project-based learning activities that have been carried out in the outdoor environment.

According to the official definition provided by the Flipped Learning Network[7]:

"*Flipped Learning is a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter*".

(Flipped Learning Network website, accessed in September 2020)

---

[7] Official definitions and other available resources can be found on Flipped Learning Network website: https://flippedlearning.org/definition-of-flipped-learning/.

In flipped classes, the learner is pushed to manage its time to dedicate in studying, to consult various data sources and to explore the domain of knowledge in the first person. Another transition happens in terms of class management. The educator can use the time available to guide students, to focus on skills and part of the knowledge is created among social groups but in class. The acquisition of new knowledge is shifted from social learning in class, using a transmittal mode, to individual learning. The time spent in class can be dedicated to co-creation of knowledge between students, and the environment becomes flexible, where the educator can help students in deep learning. Deep learning can be defined as the ability to understand the meaning and transfer one's learning to real-life contexts.

Consequently, the association of a flipped class first, and project-based learning represents two coordinated activities that are both useful to improve the effectiveness of the ESD. The complementarity between the flipped classes and the project-based learning for the ESD are explored in Table 3.4. In the Table, there are reported reasoning and notes about the adaptability of the flipped classes and project-based learning to the ESD.

I have considered other aspects that have been discussed in the literature, such as:

– the size of the class (176 participants);
– the short timeframe of the entire module (3 weeks + exam);
– the availability of space (unfortunately, this has represented one of the main negative aspects);
– guarantee to students a proper level of freedom and creativity;
– monitoring the inclusivity of international students in the groups to guarantee multiculturality;
– orienting students to think about companies located in the surrounding areas of the university or to university/campus as a Living Lab;
– enforcing the soft-skills orientation.

After having considered all the previous principles and aspects, I have formulated three equal possibilities to run the ESD:

– support existing businesses located in Turin or close to the university in running sustainability-oriented activities or implementing a strategy or solving a sustainability problem (a);
– develop a sustainability-oriented strategy to be implemented in their personal/family business (b);
– develop a sustainability-oriented strategy to be implemented in the university/department to solve a sustainability issue (c).

Table 3.4. – *Pedagogical nexus between flipped classes, project-based learning and the ESD activity in the treatment group*

Flipped class	Project-based learning	ESD activity
Focus on learning: Ensuring that students are able to engage in activities not to include the centrality of the teacher; support these activities and make them accessible to all students through differentiation and feedback;	Enable collaborative learning during the class and the outdoor activity; students can use the materials provided to be implemented in solving practical problems and finding solutions.	Develop a project-based learning activity on ESD: support existing businesses, develop solutions for the university, others.
Focus on deep comprehension: focus on the critical concepts of disciplines by ensuring that students can access it on their own; create and/or select meaningful content (typically in an audio-visual form) for their students; differentiate to make content accessible and relevant proposed for all the participants.	Students receive a basic understanding of the definitions and concepts related to sustainability; they can receive further support in understanding or retrieving other materials if needed to develop their specific projects.	Letting students to elaborate sustainability strategies to tackle existing problems or to support existing business.
Variety and customization: establishing spaces and time scans that allow students to interact and reflect on their learning; observe and regularly monitor students in order to adapt and adjust the training proposal; provide different opportunities for students to learn content and demonstrate the ability to use the knowledge.	Students can develop the project in the outdoor environment, like visiting places, organisations, and companies, as well as spending part of their in-class time to work. The educator should work with them to develop the project and to support in case of need.	Use a bottom-up approach where a group of students should interact and reflect on arriving at a shared solution that can be the company selection or the problem to solve.
Educator and facilitator: provide individual, small group, real-time class feedback as needed; conduct educational assessments *in itinere* during lessons by observing and documenting data useful to the training work continues; collaborate and reflect with other teachers by taking responsibility for their professional development.	Dedicate part of the time to support and involve groups in one-to-one feedback; verify that the project is ongoing, and continuously developed.	Explain to students how to shift their learning habits in the case of flipped class and the case of project-based learning.

Source: elaborated by the author.

Considering the size of the class, I allowed the treatment group to create groups of 10 students, also because the workload was heavy, especially during the three weeks of available time. No groups received any support by me in finding a collaboration, but I have decided to draft a letter that could be used by students to present themselves and the course learning objectives to the external organisation. It is fundamental to know that the content of the letter has been written with respect to the ethical rules and the code of conduct of the university, especially for guaranteeing the safety of the students outdoor. Expectations about the substantial involvement of the students in external institutions have been clarified in my letter, as I wanted to keep students safe in terms of expectations (like for instance to avoid any unethical behaviour from the side of the business partner, neither expectations nor benefits) (see Figure 3.1).

Figure 3.1. – *Draft of the accompanying letter used by students to present the project to any partner*

Source: elaborated by the author.

In terms of evaluation of the learning outcomes of the treatment group, I have asked them to write an essay, and to present the content of their project during the in-class a final presentation where the groups alternate on the stage. The treatment group received as input the structure of the essay, to allow me to evaluate their project outcomes using the SMARTER criteria: Specific Measurable Achievable Realistic Time-constrained plus Ethical, Recorded.

The structure of the essay directly recalls the acquisition of specific soft skills, especially managerial tools that third-year students should know:

– introduction (the main problem);
– the case (a brief description of the case);
– a hypothesis (The plan the group would like to put in place);
– details about the solution;
– business model Canvas (with few financials);
– a critique of the solution proposed (such as using SWOT analysis);
– conclusion.

I designed the ESD to explore the domain of the *metacognitive knowledge* that is the awareness of one's cognitive functioning, contextual and strategic/ reflexive knowledge for problem-solving in a given cognitive field (Anderson & Krathwohl, 2001). Specifically, in the essay and during the presentation the treatment group has been called to stress if they have achieved the skills of spotting errors in their reasoning, considering the implications of different actors for the success of their idea and to evaluate all the risks associated. The treatment group was called to provide pieces of evidence about the genuine involvement of external partners with declarations, photos, and videos with relevant actors.

The design and the planning of a business strategy were considered as a result achieved, no one has been penalised for not having concretely implemented all the stages of their plans, mainly because not all the subjects involved had times and money to invest, in that specific timeframe. In other words, the success of the threshold was designing and starting the implementation process, rather than concretely realising all the steps of the plan. I have decided to establish this specific pre-condition to allow students joining their activities without thinking only about their final mark, but to enjoy the entire process of developing and exploring possibilities with freedom and trust.

I have not given any other clues to the treatment group with the intent of letting them free to make their decisions. The treatment group asked several times to have additional material to have a better knowledge on specific topics (like in the case of sustainability problems related to water or having more data on fast fashion industry or understanding the chemical implications for the

reuse of coffee). In general, they retrieved the materials by themselves, and they used to come in class to doublecheck with me on the credibility of their data source. Students also asked to have direct contact with me during the three weeks to ask me questions at any time, and I have authorised one group member to call me in case of any issue. Table 3.5 reports the syllabus for the treatment group. The presence of barred text indicates when a theme has been removed from the programme or when the importance of the theme has been lowered.

Table 3.5. – *Pedagogical approaches for the treatment group*

MAN0089	**2018/2019**	**Treatment group**
Topics presented (in the brackets distribution of lectures):		
Theoretical concepts: Accountability, sustainable development, intergenerational equity, triple-bottom-line, natural capital, ecosystems, socio-ecological systems, biomes, human capital, CSR (rejecting CSR with examples, partnering and redefine business strategy with examples, business-as-usual paradigm, a proactive campaign with examples) Creation of Shared Value, stakeholder theory, stakeholder engagement, SDGs, SDGs interconnection and systemic thinking, Earth Overshoot Day, unsustainable corporations. Data related to SDGs: − Extreme poverty, absolute poverty, land properties for indigenous people, GDP and standard of living, billionaires, relative poverty. − Malnutrition, the Great Balancing Act, vertical farming, hydroponic, painful practices on animal farming, the meat business. − The principal cause of deaths (2000-2016), growth of the big pharma industries. − Basic literacy data. − The gender income gap, gender diversity on board of directors, percentage of women in senior management positions. − Distribution of Earth's water, water footprint, Aral Lake case study, water-related risks. − Rana Plaza, Foxconn, modern slavery. − Human migration, refugee, migrant. − World population growth. − Inside e-dumps. − Climate change evidence, nitrogen cycle, Nasa's simulation on annual surface temperature anomaly, climate change loss events (NatCat). − The story of the Great Pacific Garbage Patch, Kerala Fishermen stories. − Land conversion, overexploitation of wild species, invasive and alien species, IUCN Red list. − Rare earth, conflict minerals. Sustainable business strategy: sustainable business model definition, taxonomies of green strategies, business impacts on the society and the environment, Bottom-of-Pyramid business models, Biomimicry, eco-efficiency, Eco-innovations, closed-loop, industrial symbiosis, circular economy, green products, Global Risks Landscape 2018 of the World Economic Forum, what CEOs think about sustainability, greenwashing, UNGC, environmental management systems, buy one give one business models.		

Segue

Examples: Icelandic geothermal energy strategy for circular economy, Nature-based solutions, Cradle-2-cradle with Dopper original bottle, Nike bottle to body, Plan Toys for inclusive wood toys, DeBeers artificial diamonds, Gumdrop sneakers, Ban and Boo toothbrush business model, OffGridBox, Plastic banks.   Social and Environmental Accounting and Reporting: ethical ratings, sustainability reporting analysis.
Principal learning outcomes (original statement reported on the slides):   In the context of the complex interaction of economic, social and environmental sustainability, a student should: – Learn fundamentals about the three components of sustainability.   – Their interactions.   – The main sustainability problems affecting businesses, societies and the global/local environment.   – Understand how to plan a strategy.   – Develop initial steps of a green business strategy.   – Describe the strategy and evaluate and test its feasibility in the real context.
Teaching resources: slides and external resources (infographics, videos, guidelines, external websites)
Averaged score at the end of the module: 28,5

Source: elaborated by the author.

Chapter 4

Outcomes and results of the ESD activity

4.1. Profiling the sub-groups created within the treatment group

Students of the treatment group have formed 16 sub-groups, because not all the 176 students decided to have an active part in the ESD, especially part-time students and working students have asked for an alternative final evaluation and programme. After all, that arrangement was not compatible with their learning agreement or schedule. I have decided to arrange an alternative method for them, but the percentage of students that have not joined the ESD has been 14%[1] of the overall enrolled students. Two groups of students have provided a very unsuccessful work, and they have failed their projects. These groups were: one entirely composed of Chinese students that have not joined the class in all its duration and a group of Spanish students that had huge problems of expressing themselves in English. For them, a re-sit was arranged in due time.

Table 4.1 reports the 14 groups, while in the first column, there is reported the name of the group, the percentage of female participants and the percentage of international students are evident in the subsequent column. In theory, my expectations were that all the groups tried to implement a sort of balance in terms of gender and a balance in terms of inclusion of international students. For what concerns both the indicators, having a percentage of nearly 50% is an indicator of balance. As you can see from Figure 4.1, there have been no cases of groups with the same gender and simultaneously, all Italians or all international students. The x-axis represents the percentage of female per group. The y-axis represents the percentage of international students as a sign of multiculturality; the size of the circle is the group dimension (number of participants).

---

[1] Please to consider that usually ESD activities are run on small groups, and according to literature there are only rare examples of large classes involvement in project-based learning for sustainability.

Unfortunately, there were two groups composed by all-female and another of all international students. The presence of heterogeneous groups, for at least gender and culture was and still is a precondition for creating an intercultural dialogue within groups, but I intended to let students free to arrange themselves without any intervention from the educator. Having only two imbalanced groups out of 14, this has been a fair result indeed.

Table 4.1. – *Profiles of sub-groups herein the treatment group*

Groups [2]	Number of group members	% of female	% of international students
Bar Girandola (*Girandola cafè*)	11	55%	91%
Borracce (*Reusable bottles*)	10	50%	50%
Food Crowd Map	7	100%	43%
GC&C	11	82%	36%
Il baracchino itinerante (*The travelling food stall*)	10	70%	10%
MAIA Biogas Stakeholder Engagement	10	80%	60%
MeAll	12	42%	17%
Museo del Risparmio (*The Museum of Savings*)	11	82%	36%
Plastic waste and consumption	8	38%	25%
Survivor guide for international students	12	25%	100%
Sustainable aprons for kids	10	50%	60%
The Green Pantry app	8	50%	30%
Verfruttiamo (*Fruits and vegetables cafè*)	11	27%	45%
Water Bottle Refilling Stations	9	89%	22%
Total	*140*		
Mean		*60%*	*45%*

Source: elaborated by the author.

---

[2] The translation of the name of the shops/businesses involved is done in this table, but it is valid throughout this text.

Figure 4.1. – *Groups displayed for the percentage of female involvement (x-axis) and inclusion of international students (y-axis)*
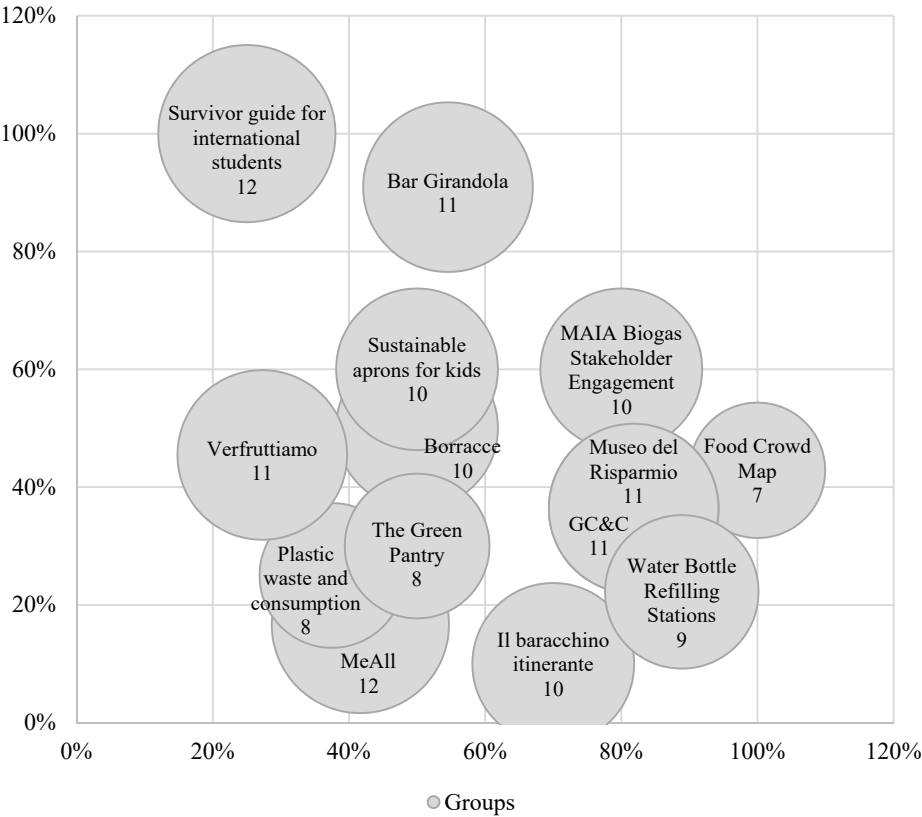
4.2. Projects presented by the sub-groups within the treatment group

The projects presented by the sub-groups within the treatment group are reported according to their typology a, b, or c. To briefly recall: support existing businesses located in Turin or close to the university (a); projects run to be implemented in their personal/familiar business (b); projects to be implemented in the university/department to solve a sustainability issue (c). Partner organisation/s, the location, and the aim of the projects will be reported accordingly. The typology of the partner involved is highlighted in brackets.

4.2.1. Projects developed in collaboration with existing businesses (a)

The cluster of the *type-a* projects was composed of four cases (Table 4.2). Two of the four projects were aimed at providing solutions to promote healthier food consumption between students and citizens. Also, one was conceived to contribute to creating a sense of awareness between children on the paper consumption and the forest management (biodiversity loss), and the last was focused on contrasting the fast fashion industry and especially the culture of overconsumption of clothes for baby.

Table 4.2. – *Type A projects presented by aims, partner organisations and locations*

Groups	Aim of the project	Partner Organisations *(project location)*
Il baracchino itinerante	Baracchino Itinerante is a small business activity aimed at offering a healthier lunch for workers and students, that does free home/office delivery, brought to the clients by bike. The aim was to design business strategies to increase the market, guaranteeing low emissions.	Baracchino Intinerante (micro-business) *Where: Turin*
Museo del Risparmio	To work towards teaching – in an accessible and fun way – essential values to young children and high school students to create more awareness as well as attaining innovative solutions to environmental problems.	Arcobaleno Cooperative (social cooperative) Museo del Risparmio (a private museum) Treedom Intesa SanPaolo (a private bank) *Where: Turin*
Sustainable aprons for kids	Introduction of a project to guarantee the circular use of school aprons with the help of an artisanal laboratory that can reuse the fabrics to create new clothes.	Lungo Tavolo 45 (association) Different schools engaged *Where: Turin*
Verfruttiamo	Fruit and vegetable bar, close to the university campus. The project was aimed to aid and plan how to increase the size of the business, guaranteeing a healthy food offer to the students.	Verfruttiamo (micro-business) *Where: Turin (close to the School of Management and Economics)*

Source: elaborated by the author.

All the groups spent days in visiting such companies, and they have reached further contacts with associations, start-ups or performed interviews with entrepreneurs. Transcription of the interview has been provided, as well as video interviews and photos. In one case (Verfruttiamo), the students have forecasted urgent financial problems and the presence of a wrong business strategy, that despite the initial commitment of the entrepreneur was leading to a completely unsustainable business (nor under financial or environmental perspective). One year later that business failed, confirming the forecast of the students. In another case, the project has been implemented (Museo del Risparmio), and it is still running (feedback requested informally to one of the participants).

4.2.2. Projects developed with personal/familiar business (b)

The second group of projects, called *type-b*, is composed of four cases (Table 4.3). Two have been run in family businesses, Bar Girandola and MAIA, familiar to students. This is the case of Bar Girandola, aiming to lower its environmental impact by introducing different types of low-impact adjustments. The second is MAIA Biogas, where the students also developed a video that has been used by the company itself to create engagement. In the other two cases, the groups involved their friends/parents, but the commitment of the group was not comparable to the rest. For instance, one group wanted to include a series of plastic-banned products into an existent eco-shop in Spain, but the students lacked in providing pieces of evidence about the shops itself. In the other case, Green Pantry, the students performed a great market analysis, and they started to contact business incubators and a network of industrials, but they stopped at a point in time due to their lack of knowledge on mobile applications and IT skills. The Green Pantry project has been run with enthusiasm and participation though, and the final presentation was more evocative than the one of the Spanish eco-shop.

Table 4.3. – *Type B projects presented by aims, partner organisations and locations*

Groups	Aim of the project	Partner organisations *(project location)*
Bar Girandola	Analyse convenient solutions to lower the environmental impact of the cafeteria, such as reusable cups, promoting sustainability messages printed on the paper tissue, change of the furniture.	Cafeteria owner (single entrepreneur) *Where: Turin*

Groups	Aim of the project	Partner organisations *(project location)*
MAIA Biogas Stakeholder Engagement	Maia Rigenera project on biogas methane, although having clear and remarkable positive results on environment, employment, and economy, it has raised many criticisms among people, in particular among the residents of Lucera and Foggia. The main complaint is about the smell that the composting is generating; moreover, some people accused the company of producing air pollution which, consequently, may create health problems, and to the extreme, cancers. The company needed a stakeholder engagement campaign to tackle the misinformation.	MAIA Rigenera srl (SME) *Where: Puglia (Lucera and Foggia)*
Plastic waste and consumption	How to introduce sustainability products in one of the shops owned by one of the participants.	Sustainable and eco-shop *Where: Spain*
The Green Pantry	Development of a mobile app that provides an overview of both the pantry and the refrigerator. To know the food stock and avoid food waste.	Bugnion (a network of industrials and consultants)

Source: elaborated by the author.

4.2.3. Projects to be implemented in the university/department (c)

Projects design to be implemented in the university area have been genuinely appreciated by students enthusiastic about being directly involved in a factual activity with a keen sense of belonging. At a time when the project was run, UniTo had no clear policy on reusable bottles, neither on refilling station, and part of the work of my students served to help and to create pressure to the Green Office.

Table 4.4. – *Type C projects presented by aims, partner organisations and locations*

Groups	Aim of the project	Partner organisations *(project location)*
Borracce	"Our work aims to provide the University of Turin with a project for the integration of a sustainable alternative to plastic bottled water, also because nowadays, more and more organisations are turning to sustainable positions in order to be compliant with new Governmental standards and regulations". Select the most environmentally friendly reusable bottles to be adopted by UniTo.	Green Office
Food Crowd Map	It was aimed at creating a website[3] that worked as an aggregation of crowd-inputs of the students, with the geographical indications of where to find local food according to allergy, gluten-free options, vegan, vegetarian, and budget alignment.	Local restaurants near the School of Management and Economics
GC&C	Introduce reusable coffee cups with the university logo to reduce the impact of disposable cups consumed during the coffee breaks. Reuse of the coffee dreg wasted to produce fertilizers for urban gardens and for cultivating mushrooms and mycorrhizae.	Funghi Espresso (start-up) Several producers of reusable coffee cups The University of Turin cafés Green Office *Where: Turin, School of Management and Economics*
MeAll	Me-all is an online food order and delivery service. It acts as a locker where food could be located near the university. Conceived as a sustainable food delivery platform. The food is checked considering healthy solutions and proper nutritional values.	Students presented their project to a business incubator

Segue

---

[3] The website created is available at https://eat-different.wedev.ro/home/.

Groups	Aim of the project	Partner organisations *(project location)*
Survivor guide for international students	Write and spread knowledge about how to survive in Turin for international students belonging to Asian countries. The guide has been implemented and divulgated to international offices and associations of students. Available in Urdu [4], Bangla [5] and Vietnamese.	
Water Bottle Refilling Stations	Provide a strategy to install one (or multiple) water bottle filling stations at the Department of Management campus in highly trafficked areas.	Green Office

Source: elaborated by the author.

There were six *type-c* projects (Table 4.4). Two linked to water consumption, three linked to food consumption (one about coffee), and the last, one of the most interesting for its social orientation and inclusion aim, was the one led by international student's (the survivor guide). Students of type-c projects distinguished themselves for being truly motivated, most of those groups created and realised a beta version of their projects. For instance, the Borracce group designed and manufactured the first customised version of the future UniTo bottle; the Food Crowd Map developed their website, that is still available as a demo; or, the guide written by the Asian students has been sent to the international university offices, and other international associations. Another example is the one of the group that worked on the need of installing refillable water stations in the school corridors, they enriched their essay with a survey with more than 200 respondents, and that results have been sent to the Green Office. This last group have also printed many posters to create a massive campaign for having the refilling stations installed (that stations have been introduced one year later).

Inside their essays, three groups have decided to use the sustainable business model canvas adapted and the flourishing business model canvas and they have learnt in autonomy how to implement them.

---

[4] The Urdu or Lashkar is an Indo-European language, native to Pakistan and India.

[5] Bangla is the native language of Bangladesh commonly spoken in parts of India.

4.3. Critical perspective on the ESD

On an emotional side, *enthusiasm* is the first word I can use to describe the works of many. Smiling faces and some stress have been reported informally by students. Most of them were happy for having been involved in a practical situation, and most of them reported being satisfied with meeting entrepreneurs or visiting an exciting site. Others have reported having learnt from professional practices on how to recognize problems that can compromise the feasibility of projects. In some cases, students have detected that part of the problem was due to the lack of managerial skills in the entrepreneur.

Almost everyone was thrilled by the idea of having been taken seriously in *consideration* for their idea. Specifically, the one is working on *type-c* projects have asked many times to bring their project to the attention of the central sustainability department of UniTo or being considered by the Green Office. A sense of *discomfort* was presented by the two groups working for the water problem because they discovered that despite their plan was good, the public administration cannot implement an innovation without respecting the traditional bureaucracies. Moreover, the bureaucracy problem has also affected the MeAll project, as well as technical concerns like in the case of the mobile app for the pantry.

Creativity has shaped most of the projects, and the value-added has been to have the opportunity to see and touch their creation. An example of how groups have used creativity is depicted in Figure 4.2.

While most students said to enjoy the ESD, one argued about the lack of a more guided syllabus, because he was scared by the idea of failing the exam. Indeed, most of the groups made incredible performances, and almost all the essays submitted respected all the rules and were completed. Other negative comments have been provided for the arrangement of the class, as the only room available was not designed to host 16 groups simultaneously and not removable or movable tables were present. In terms of time management, students have joined the first three theoretical lectures with a sensational attendance rate, more than the capacity of the room indeed. Most of them completely disappeared during the three lectures of the clinic, because they could not work at the same time in the same class. Therefore, I have started reserving a meeting of 10 minutes per group per class, but when I needed to communicate something important, I used emails. Unfortunately, the number of people frequenting the clinic was about 30% of the estimated total attendance, as groups decided to send only few representatives joining our meeting. Running the ESD alone, as a single educator, has been tremendously hard, whereas being joined by tutors could have helped me during the group management.

My feelings and the feelings of the class also emerged from the students' evaluation of the course. In Table 4.5, the satisfaction rate[6] for the treatment group is reported by mean values calculated on the answers given by 136 participants of the ESD. The lowest score has been attributed to the workload, especially about the duration of the course, while the highest scores have been attributed to the side activity. This is uncanny considering that project-based learning was the focus of the course and not the side activity. However, I suppose that the facts can explain this that the vast majority of students label as side activity everything different from transmittal pedagogism, and this is reflected by the lowest score of the material criteria, evidence that the flipped class has not been accepted as a standard teaching method.

Table 4.5. – *Students' satisfaction rate*

Evaluation criteria	Average score obtained out of 4[7]
Previous knowledge	3,38
Workload	3,32
Materials	3,36
Final exam	3,38
Schedule	3,46
Stimuli	3,44
Clarity	3,53
Side activities	3,80
Coherence	3,55
Professor's availability	3,62
Interest in the subject	3,53

Source: elaborated by the author.

---

[6] Data on the satisfaction rate are not available for the control group as there have been removed from the database.

[7] Conceived as a Likert scale, 4 is the maximum score attributable to express the approval of a specific criteria.

Figure 4.2. – *Examples of how creativity has been used by students of the treatment group*

Source: elaborated by the author from extracts of the projects presented.

4.4. Towards an evaluation of the outcome of the ESD

With the initial intent of implementing an ESD inside my Department, I wanted to challenge part of the limitations of ESD that usually require to limit the activity to small groups or classes. In the following months, something surprising happened. I have started receiving emails from students asking for the possibility of discussing their final dissertation with my support. From the cohort 2018/2019, 41 students of the treatment group have graduated with a dissertation on a sustainability issue [8] (the list of the argument is reported in Table 4.6). From the control group, that number was equal to 11 students.

---

[8] The graduation score for the students discussing a dissertation on sustainability topics was equal to 100 out of 110, while the majority of students graduating on their course ob-

Table 4.6. – *A review of the topic presented by the discussant*

The topic of the thesis on the strong-sustainability topic
Analysis of energy consumption in the retail sector in the EU market and an introduction of innovative integrated solutions to reduce carbon dioxide emissions.
Alternative accounts between Trump, SEC and Stakeholders on sustainability issues.
Circular economy innovation in the fashion industry.
Bio-districts: an evolution of SME industrial district model within agri-food sector in Italy.
Carbon Credits.
Corporate Governance and Sustainable Boards.
Design Management for Sustainability: the case of Lush.
Electric Vehicles Companies, Business Models analysis of the future's mobility.
Emission trading system.
Fur industry.
Green Economy policy in China.
Green Marketing in China.
Lights and shadows of a greener cosmetic industry.
Marketing of the Breast Milk Substitutes.
The problem of micas extraction.
Reducing the environmental impact of a disposable cup.
Renewable energy as a means of solving energy poverty in Africa.
SDGs and Business.
Social recovery and redistribution of foodstuffs: the case of the Turin Agribusiness Centre.
Socio-economic dynamics of Alternative Food Network.
Sustainability Report: changes with the EU Directive 2014/95.
Sustainable Business Alternatives: Green Policies as Driver of Profitability.
Sustainable Cocoa Economy.
Sustainable development of China's electric power construction enterprise.
Sustainable Futures Lab: Management for a rapidly changing world.
The exploitation of nature for brands' marketing purposes.
Vegetable Fur business models.
Waste as a resource: benefits of circular economy as a solution to the problem of waste in Italy.

Source: elaborated by the author.

Other clues emerged; for instance, I have started to receive a request for recommendation letters from students that wanted to continue to study strong-sustainability topics and create their future careers on that path. I have signed nine recommendation letters for the treatment groups, aimed at attending courses focused on sustainability, in different ways, and only one letter for the control group.

---

tain a score between 66-90 (according to a query ad-hoc extracted in October 2020 from the Central Student's Secretary).

Regarding the graduation time of the students discussing a dissertation on sustainability topics (*GT*), the 73% of the treatment groups graduated in time [9], while the percentage for the control group is 70%, concluding that the results are similar.

While the number of participants (*N_ST*) can be used as a proxy for an initial interest for the sustainability-related concept, the number of dissertations (*N_TH*) developed on sustainability topics, and the number of recommendation letters signed for future students of strongly-oriented sustainability courses (*N_RL*) can be used as a proxy for having stimulated and transformed students' behaviours about sustainable development.

The change of the pedagogy should not significantly influence the average score obtained in the course as it is supposed that the evaluation metric does not depend on the teaching techniques. Table 4.7 reports the values of the criteria that could be used to evaluate the outcomes of the ESD.

Table 4.7. – *Criteria used to evaluate the outcomes of the ESD*

Type of group	N_ST	N_TH	N_RL	GT	AV_Score
Control group	124	11	1	0.70	27.28
Treatment group	176	41	9	0.73	28.50

Source: elaborated by the author.

As it can be readily evident from Table 4.6, all the values of the treatment groups are more significant than the respective results of the control group. Precisely, in Table 4.8, the results are scaled, and the delta is reported as a percentage.

Table 4.8. – *Criteria used to evaluate the outcomes of the ESD, values are scaled*

Type of group	N_ST	N_TH	N_RL	GT	AV_Score
Control group	0,704545	0,268293	0,111111	0,958904	0,957193
Treatment group	1	1	1	1	1
Δ	*42%*	*273%*	*800%*	*4%*	*4%*

Source: elaborated by the author.

---

[9] Students that discussed the dissertation herein the academic year terms are "graduated on time".

From the table above, it is evident as nor *GT*, and the changes have deeply influenced neither *Av_Score* in the pedagogical approach introduced in the treatment group. This is correct, as the motivation for run an ESD experiment cannot be aimed by the intent of increase students' knowledge of a specific topic, and at the same time, the changes in the pedagogy should not affect the achievement of the graduation in terms of time.

N_ST can be used as a proxy of the interest of the students towards the provision of a sustainability-oriented course before its effective start, practically the students' choices were made exclusively on the content of the syllabus. It can be affirmed that the course run on an ESD has been more attractive also in its ex-ante phase. A more significant increase is registered for *N_TH*, and even more remarkable for *N_RL*. Both these criteria suggest that a strong-sustainability course provided during the third year of the bachelor can be used as a springboard to orient future master students in continuing their studies on sustainability-related disciplines.

Concluding remarks

At the beginning of this book, different literatures have been discussed, but in all the cases presented, different types of transformations are invoked. Scholars require deep transformations to be implemented at different scales: at micro-level, at a meso-level, and finally, at macro-level. The micro-level transformations directly regard the lecturer/educator in its novel role of shaping future leaders towards a holistic view of sustainability, to finally become, sustainable leaders. At a meso-level, classes and the learning environment, as well as the entire teaching offer of a single department/school should be transformed with intent of tightening together single courses in telling a coherent story throughout all the years a student will pass in our institutions. At a macro-level, universities are called to become front-runners in shifting the third level education towards a marked focus on sustainable development. The type of change required is systemic, in the sense that all the components of a university setting are touched. Specifically, also the interactions between the components are transversally impacted to become more sustainability-oriented than the usual.

Theories and pedagogies are not an exception. Specifically, the relevance of transformational learning has been presented and discussed stressing the interplays between the theory itself and the innovative teaching methods required. Again, in this systemic framework, pedagogies and methods are multiple and interconnected, so it should be wrong to refer to the contribution of a single method or a single pedagogy. The lecturer is called to maintain in equilibrium a complex formula where learning objects, pedagogies, teaching methods, organisational settings are included. Moreover, the role of the lecturer is even more emphasised during the design phase of an ESD activity due cultural factors, socio-economic-geographical and political factors affecting one specific university compared to another, but also the intercultural class composition should be considered as a critical factor directly affecting the learning style.

In this broad framework, SDGs are used to vehiculate information to future business managers, to evaluate the sustainability performance of countries, to

orient the sustainability performance of universities, and they are the fil rouge of this discourse.

Additionally, the book presents the criticalities linked to the selection of a proper methodology among the different options available. The intrinsic epistemological nature of the autoethnography has been described, and what is useful to recall here is that as a method, in its analytic and critical form, it acquires more sense and validity when it is supported by a reflexive section. A final reflexive section is then presented.

"I was thinking about writing this book from the end of the ESD experience, but now I am more convinced that having waited for a more extended period has been the right choice. I have had more time to reflect upon the successful and unsuccessful aspect of this experiment and to learn the greater importance that soft skills, united to attitudes and values will play in shaping future managers' mind and transforming them in sustainable oriented leaders.

If on the one hand, the experiment has led successful results in terms of the number of students oriented towards a sustainability career and to continuous learning of strongly-sustainability related disciplines, it is also true that I have never replicated this experiment in other courses. To scale up and let a change to be systemic, I, as researcher and lecturer, have to appeal to my sense of stewardship in my community, my Department, to provide evidence about what worked, and what should be changed. While I can narrate impressive students' reaction, on the other side, I should argue that today, students are generically more aware by the existence of climate crisis, social problems, and in general, wicked problems. To let this change systemic, I need, and we need more collaboration, among colleagues and between academics to create supportive movements to change and allow this transformation in students faster.

I had the fortune of being trusted by my Department manager and coordinator, and colleagues giving the green lights to conduct this experiment, but several limitations emerged. First, conducting such a type of counterfactual analysis, a sustainability test should be run before and after the ESD, to affirm that the basic knowledge of sustainability has been acquired. Messages sent and messages received. Nevertheless, disciplinary, multidisciplinary, epistemic, or procedural, a sustainability knowledge test should be considered as a valid proxy for considering the effectiveness of the teaching.

A second intrinsic weakness can be represented by the lack of my knowledge on counterfactual tests, which are mostly rare in the traditional research background applied to test management students' response to pedagogical changes. More attention should be paid in collecting data such as recording dialogues, notes, feedbacks. Here I have tried to reproduce in a sort of storytel-

ling spirit, those emotions, feelings, opinions, that I have recorded as the most impressive ones. Even though, a well prepared and designed counterfactual analysis should consider relying on a better step of research design.

Third, with the point of view of an Italian educator, exception due for new campuses, it is hard to find suitable places where more than a hundred people can work jointly on projects. Physical infrastructures are essential, as well as the learning environment. COVID-19 is and will inevitably change the way through which active learning can be implemented in universities and, at least in the short term, active learning will be dramatically affected, and opportunities reduced.

On the other side, with pride, but with a humble attitude, it is hard to find similar initiatives or research papers developed with an autoethnographic research approach. Usually, case studies triangulate or cross-compare different experiences, but there is always a sort of 'cold' description of facts, as researchers tell stories that have not created. I remember the first day I have scheduled the office hour for students discussing their dissertation, and most of them are truly worried. They would like to have me as a tutor, but they were truly scared by the idea of being forced or pushed in dealing with something that they did not want to do. I let them free to select the topic for the dissertation, telling them that my role of supervisor was more oriented in supporting them in the right procedural process and methodological rectitude, more than on a top-down approach. Enthusiastic for the ideas of being free again, I clearly remember the glimpse in their eyes, when they started discussing the dissertation proposal.

They were genuinely motivated, and most of their works were of high quality. I was sceptical, I admit. I had the impression that students were replicated the same algorithm of picking the professor more friendly to have a short cut for their final graduation. That common habit has been confirmed for no more than five of them, the others have challenged my expectations, positively. Especially in their works, they have strongly supported or challenged vis-à-vis specific topic, like breastfeeding milk, micas, or alternative accounts, and I have been proud of this. Some of them were people moved from remote parts of the globe, that for fortuity I have met. Incredibly, I can affirm that most of the participants in the ESD have matured or at least they have been exposed to what the OECD (2018) depicts as the profile of the 2030's learners.

Anticipation, action, and reflection. These are the three profiles that, we, as educators should consider in designing our courses, and these three attitudes can be implemented in application to any disciplines as they refer to the mindset applied to specific contexts. So, the transformation expected in students will be evident, according to OECD, in selecting the right set of competencies

to create new values, taking responsibility, and reconciling tensions and dilemmas.

What I have learnt from this experience is that the design and the development of an ESD activity requires a strong commitment by the educator, because the design of cognitive and meta-cognitive learning experience should broaden the traditional framework course design posing challenges that cover a wide range of socio-emotional aspects that can finally entail the transformation in students.

Students of business, management and accounting courses can become future change agents, and they will have a positive impact on their surroundings, and we as educators should provide them with the proper support they need to complete their transformation. The first transformation should regard us, continuous learning, willingness to refine our pedagogical scheme towards adjustable and dynamics settings, explore new teaching techniques, being updated on sustainability trends, be engaged in the local business community, be authentic and collaborative and be able to risk betting on ourselves. These are my suggestion to all those that want to experiment ESD in their courses".

Bibliography

Abou-Warda, S.H. (2014). Mediation effect of sustainability competencies on the relation between barriers and project sustainability (the case of Egyptian higher education enhancement projects). *Sustainability Accounting, Management and Policy Journal*, 5(1), 68-94. https://doi.org/10.1108/SAMPJ-04-2011-0017.

Adams, C. (2010). Sustainability research in need of a multi-disciplinary approach and a practice and policy focus? *Sustainability Accounting, Management and Policy Journal*, 1(1). https://doi.org/10.1108/sampj.2010.46801aaa.001.

Adams, C. (2018). Debate: Integrated reporting and accounting for sustainable development across generations by universities. *Public Money & Management*, 38(5), 332-334. https://doi.org/10.1080/09540962.2018.1477580.

Adhikariparajuli, M., Hassan, A., Fletcher, M., & Elamer, A.A. (2020, January 1). Integrated reporting in higher education: insights from Scotland, Northern Ireland and Wales. *Social Responsibility Journal*. https://doi.org/10.1108/SRJ-01-2019-0031.

Adomssent, M., Godemann, J., & Michelsen, G. (2007). Transferability of approaches to sustainable development at universities as a challenge. *International Journal of Sustainability in Higher Education*, 8(4), 385-402. https://doi.org/10.1108/14676370710823564.

Ahlburg, D.A. (2020). Covid-19 and UK Universities. *The Political Quarterly*, 91(3), 649-654. https://doi.org/10.1111/1467-923X.12867.

Alonso-Almeida, M. del M., Marimon, F., Casani, F., & Rodriguez-Pomeda, J. (2014). Diffusion of sustainability reporting in universities: current situation and future perspectives. *Journal of Cleaner Production*, 106, 144-154. https://doi.org/10.1016/j.jclepro.2014.02.008.

Anderson, L.W., & Krathwohl, D.R. (2001). *A taxonomy for learning, teaching, and assessing. A revision of Bloom's taxonomy of educational objectives*. New York, NY, USA: Addison Wesley Longman.

André, R. (2020). Teaching Climate Leadership: Promoting Integrative Learning in Courses on Strong Sustainability. *Journal of Management Education*, 1-28. https://doi.org/10.1177/1052562920941547.

Annan-Diab, F., & Molinari, C. (2017). Interdisciplinarity: Practical approach to advancing education for sustainability and for the Sustainable Development Goals. *International Journal of Management Education*, 15(2), 73-83. https://doi.org/10.1016/j.ijme.2017.03.006.

Ávila, L.V., Beuron, T.A., Brandli, L.L., Damke, L.I., Pereira, R.S., & Klein, L.L. (2019). Barriers to innovation and sustainability in universities: an international comparison. *International Journal of Sustainability in Higher Education*, 20(5), 805-821. https://doi.org/https://doi.org/10.1108/IJSHE-02-2019-0067.

Ávila, L.V., Leal Filho, W., Brandli, L., Macgregor, C.J., Molthan-Hill, P., Özuyar, P.G., & Moreira, R.M. (2017). Barriers to innovation and sustainability at universities around the world. *Journal of Cleaner Production*, 164, 1268-1278. https://doi.org/https://doi.org/10.1016/j.jclepro.2017.07.025.

Balsiger, J., Förster, R., Mader, C., Nagel, U., Sironi, H., Wilhelm, S., & Zimmermann, A.B. (2017). Transformative learning and education for sustainable development. *GAIA-Ecological Perspectives for Science and Society*, 26(4), 357-359.

Barth, Matthias. (2013). Many roads lead to sustainability: a process-oriented analysis of change in higher education. *International Journal of Sustainability in Higher Education*, 14, 160-175. https://doi.org/https://doi.org/10.1108/14676371311312879.

Barth, Matthias. (2016). Teaching and Learning in Sustainability Science, in H. Heinrichs, P. Martens, G. Michelsen, & A. Wiek (Eds.), *Sustainability Science: An Introduction*. Dordrecht: Springer Netherlands, (325-333), https://doi.org/10.1007/978-94-017-7242-6_27.

Barth, Matthias, & Michelsen, G. (2013). Learning for change: an educational contribution to sustainability science. *Sustainability Science*, 8(1), 103-119.

Belyaeva, Z., Scagnelli, S.D., Thomas, M., & Cisi, M. (2018). Student perceptions of university social responsibility: Implications from an empirical study in France, Italy and Russia. *World Review of Entrepreneurship, Management and Sustainable Development*, 14(1-2), 23-42.

Bernstein, J.H. (2015). Transdisciplinarity: A review of its origins, development, and current issues. *Journal of Research Practice*, 11(1), 1-20.

Bramwell-Lalor, S. (2019). Assessment for Learning on Sustainable Development, in W. Leal Filho (Ed.), *Encyclopedia of Sustainability in Higher Education*. Cham: Springer Nature Switzerland AG.

Braßler, M., & Block, M. (2017). Interdisciplinary Teamwork on Sustainable Development – The Top Ten Strategies Based on Experience of Student Initiated Projects, in *Handbook of Theory and Practice of Sustainable Development in Higher Education*. Springer, (65-77).

Brookfield, S.D. (2000). Transformative learning as ideology critique, in J. Mezirow & Associates (Eds.), *Learning as transformation: Critical perspectives on a theory in progress*. San Francisco, California: Jossey-Bass, (125-148).

Broucker, B., De Wit, K., & Verhoeven, J.C. (2018). Higher education for public value: taking the debate beyond New Public Management. *Higher Education Research & Development*, 37(2), 227-240.

Brown, V.A., Harris, J.A., & Russell, J.Y. (2010). *Tackling wicked problems through the transdisciplinary imagination*. London, UK: Earthscan.

Brusca, I., Labrador, M., & Larran, M. (2018). The challenge of sustainability and

integrated reporting at universities: A case study. *Journal of Cleaner Production*, 188, 347-354. https://doi.org/https://doi.org/10.1016/j.jclepro.2018.03.292.

Calvano, G. (2017). *Educare per lo sviluppo sostenibile. L'impegno degli atenei italiani: esperienze in corso e buone pratiche*. Roma: Aracne. Retrieved from https://books. google.it/ books?id=doaLtAEACAAJ.

Cantor, N., & Englot, P. (2014). Civic renewal of higher education through renewed commitment to the public good, in J.N. Reich (Ed.), *Civic Engagement, Civil Development, and Higher Education.* Washington, DC, 1-11.

Carayannis, E.G., Grigoroudis, E., Stamati, D., & Valvi, T. (2019). Social Business Model Innovation: A Quadruple/Quintuple Helix-Based Social Innovation Ecosystem. *IEEE Transactions on Engineering Management*, 1-14. https://doi.org/ 10.1109/TEM.2019.2914408.

Chambers, D.P., & Walker, C. (2016). S*ustainability as a Catalyst for Change in Universities: New Roles to Meet New Challenges BT – Challenges in Higher Education for Sustainability*, in J.P. Davim & W. Leal Filho (Eds.). Cham: Springer International Publishing, 1.14. https://doi.org/10.1007/978-3-319-23705-3_1.

Cho, C., Dyllick, T., Falkenstein, M., Killian, S., O'Regan, P., & Reno, M. (2014). Ethics, responsibility, and sustainability (ERS) in business school accreditation: Peer-learning perspectives. *Discussion Draft 7.0 Globally Responsible Leadership Initiative-50+ 20 Values in Action Group-Management Education for the World*.

Cho, Y., & Brown, C. (2013). Project-based learning in education: Integrating business needs and student learning. *European Journal of Training and Development*, 37(8), 744-765.

Clugston, R., & Calder, W. (2014). Higher education for strong sustainability, in P.B. Corcoran & B.P. Hollingsead (Eds.), *Intergenerational learning and transformative leadership for sustainable futures*. Wageningen: Wageningen Academic Publishers, 113-125.

Corazza, L., Cisi, M., & Scagnelli, S.D. (2018). Creation of Shared Value in Action: The Case of a Living Lab Using Transformative Learning. *Journal of Business Ethics Education*. https://doi.org/10.5840/jbee20181512.

Corriveau, A. (2020). The International Journal of Developing authentic leadership as a starting point to responsible management : A Canadian university case study. *The International Journal of Management Education*, 18(1), 100364. https://doi.org/10.1016/j.ijme.2020.100364.

Cortese, A.D. (2003). The critical role of higher education in creating a sustainable future. *Planning for Higher Education*, 31(3), 15-22.

Costanzo, L.A., & MacKay, R.B. (2009). *Handbook of research on strategy and foresight*. Cheltenham, UK: Edward Elgar.

Cottafava, D., Cavaglià, M.G., & Corazza, L. (2019). Education of sustainable development goals through students' active engagement: A transformative learning experience. *Sustainability Accounting, Management and Policy Journal*, 10(3), 521-544. https://doi.org/10.1108/SAMPJ-05-2018-0152.

Cottafava, D., Corazza, L., & Cavagliá, G. (2020). Struggles and Successes of Transformative Learning for the SDGs, in T.K. Tan, M. Gudic, & P.M. Flyn (Eds.), *Struggles and Successes in the Pursuit of Sustainable Development* (pp. 11-22). London, UK: Routledge.

Crow, M.M. (2010). Organizing Teaching and Research to Address the Grand Challenges of Sustainable Development. *BioScience*, 60(7), 488-489. https://doi.org/10.1525/bio.2010.60.7.2.

Crutzen, P.J. (2002). Geology of mankind. *Nature*. https://doi.org/10.1038/415023a.

Crutzen, P.J., & Stoermer, E. . (2000). Global change newsletter. *The Anthropocene*, 41, 17-18.

Dagiliūtė, R., Liobikienė, G., & Minelgaitė, A. (2018). Sustainability at universities: Students' perceptions from Green and Non-Green universities. *Journal of Cleaner Production*, 181, 473-482. https://doi.org/doi: 10.1016/j.jclepro.2018.01.213.

Davies, G.R. (2013). Appraising Weak and Strong Sustainability. *Consilience*, (10), 111-124. https://doi.org/10.2307/26476142.

De Vita, G. (2001). Learning Styles, Culture and Inclusive Instruction in the Multicultural Classroom: A Business and Management Perspective. *Innovations in Education and Teaching International*, 38(2), 165-174. https://doi.org/10.1080/14703290110035437.

Del Sordo, C., Farneti, F., Guthrie, J., Pazzi, S., & Siboni, B. (2016). Social reports in Italian universities: disclosures and preparers' perspective. *Meditari Accountancy Research*, 24(1), 91-110. https://doi.org/10.1108/MEDAR-09-2014-0054.

Disterheft, A., Caeiro, S., Azeiteiro, U.M., & Filho, W.L. (2015). Sustainable universities – A study of critical success factors for participatory approaches. *Journal of Cleaner Production*, 106, 11-21. https://doi.org/10.1016/j.jclepro. 2014.01.030.

Dobson, A. (1998). *Justice and the environment: Conceptions of environmental sustainability and theories of distributive justice*. Oxford, UK: Clarendon Press.

Dorado, S., & Ventresca, M.J. (2013). Crescive entrepreneurship in complex social problems: Institutional conditions for entrepreneurial engagement. *Journal of Business Venturing*, 28(1), 69-82. https://doi.org/https://doi.org/10.1016/j.jbusvent. 2012.02.002.

Dumay, J., & Dai, T. (2017). Integrated thinking as a cultural control? *Meditari Accountancy Research*, 25(4), 574-604. https://doi.org/10.1108/MEDAR-07-2016-0067.

Dunleavy, P., & Hood, C. (1994). From old public administration to new public management. *Public Money & Management*, 14(3), 9-16.

Dyllick, T. (2015). Responsible management education for a sustainable world: The challenges for business schools. *Journal of Management Development*, 34(1), 16-33. https://doi.org/10.1108/JMD-02-2013-0022.

Edwards, M., Brown, P., Benn, S., Bajada, C., Perey, R., Cotton, D., Waite, K. (2020). Developing sustainability learning in business school curricula-productive boun-

dary objects and participatory processes. *Environmental Education Research*, 26(2), 253-274. https://doi.org/10.1080/13504622.2019.1696948.

Efthimiou, O. (2017). Heroic ecologies: embodied heroic leadership and sustainable futures. *Sustainability Accounting, Management and Policy Journal*, 8(4), 489-511. https://doi.org/10.1108/SAMPJ-08-2015-0074.

Eliot, C.W. (1907). Academic freedom. *Science*, 26(653), 1-12.

Ellis, C., Adams, T.E., & Bochner, A.P. (2011). Autoethnography: an overview. *Historical Social Research/Historische Sozialforschung*, 273-290.

Etzkowitz, H., & Leydesdorff, L. (1997). Universities and the global knowledge economy : a triple helix of university-industry-government relations/edited by Henry Etzkowitz and Loet Leydesdorff. *Continuum, London. Science, Technology and the International Political Economy Series*, 184.

Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation : from National Systems and "Mode 2' to a Triple Helix of university – industry – government relations. *Science And Technology*, 29(2), 109-123. https://doi.org/10.1016/S0048-7333(99)00055-4.

Evans, T.L. (2010). Critical social theory and sustainability education at the college level: Why it's critical to be critical. *Journal of Sustainability Education*, 1, 1-16.

Evans, T.L. (2015). Transdisciplinary collaborations for sustainability education: Institutional and intragroup challenges and opportunities. *Policy Futures in Education*, 13(1), 70-96. https://doi.org/10.1177/1478210314566731.

Evans, T.L. (2019). Competencies and Pedagogies for Sustainability Education: A Roadmap for Sustainability Studies Program Development in Colleges and Universities. *Sustainability*, 11(19), 5526. https://doi.org/10.3390/su11195526.

Falkenstein, M., & Snelson-Powell, A. (2020). Responsibility in Business School Accreditations and Rankings, in D.C. Moosmayer, O. Laasch, C. Parkes, & Brown K. (Eds.), *The SAGE Handbook of Responsible Management Learning and Education* (p. 439). London, UK: SAGE Publications Limited.

Ferraris, A., Belyaeva, Z., & Bresciani, S. (2018). The role of universities in the Smart City innovation: Multistakeholder integration and engagement perspectives. *Journal of Business Research*, *in press*, 1-9. https://doi.org/https://doi.org/10.1016/j.jbusres.2018.12.010.

Ferraro, F., Etzion, D., & Gehman, J. (2015). Tackling Grand Challenges Pragmatically: Robust Action Revisited. *Organization Studies*, 36(3), 363-390. https://doi.org/10.1177/0170840614563742.

Filho, W.L., Raath, S., Lazzarini, B., Vargas, V.R., Souza, L. De, Anholon, R., Orlovic, V.L. (2018). The role of transformation in learning and education for sustainability. *Journal of Cleaner Production*, 199, 286-295. https://doi.org/10.1016/j.jclepro.2018.07.017.

Findler, F., Schönherr, N., Lozano, R., Reider, D., & Martinuzzi, A. (2019). The impacts of higher education institutions on sustainable development: A review and

conceptualization. *International Journal of Sustainability in Higher Education*, 20(1), 23-38. https://doi.org/10.1108/IJSHE-07-2017-0114.

Fissi, S., Romolini, A., Gori, E., & Contri, M. (2021). The path toward a sustainable green university: The case of the University of Florence. *Journal of Cleaner Production*, 279, 123655. https://doi.org/https://doi.org/10.1016/j.jclepro.2020.123655.

Fonseca, A., Macdonald, A., Dandy, E., & Valenti, P. (2011). The state of sustainability reporting at Canadian universities. *International Journal of Sutainability in Higher Education*, 12(1), 22-40. https://doi.org/10.1108/14676371110 98285.

Frei, J., Lubinger, M., & Greiling, D. (2020). Assessing Universities' Global Reporting Initiative G4 Sustainability Reports in Concurrence with Stakeholder Inclusiveness, in F. Manes-Rossi & R. Levy Orelli (Eds.), *New Trends in Public Sector Reporting: Integrated Reporting and Beyond* (pp. 35-56). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-40056-9_3.

Freire, P. (1972). *Pedagogy of the oppressed* (2018th ed.). Bloomsbury Publishing USA.

Gallhofer, S., Haslam, J., & Yonekura, A. (2015). Accounting as differentiated universal for emancipatory praxis: accounting delineation and mobilisation for emancipation (s) recognising democracy and difference. *Accounting, Auditing & Accountability Journal*, 28(5), 846-874.

Gamage, P., & Sciulli, N. (2017). Sustainability Reporting by Australian Universities. *Australian Journal of Public Administration*, 76(2), 187-203. https://doi.org/10.1111/1467-8500.12215.

Gariglio, L. (2017). L'autoetnografia nel campo etnografico. *Etnografia e ricerca qualitativa*, 3, 487-504. https://doi.org/10.3240/88717.

Geuna, A., & Muscio, A. (2009). The governance of university knowledge transfer: A critical review of the literature. *Minerva*, 47(1), 93-114. https://doi.org/10.1007/s11024-009-9118-2.

Gimenes, T.C., Machado, M.K., & Vernalha, E.B.R. (2019). Empowerment in Sustainability, in W. Leal Filho (Ed.), *Encyclopedia of Sustainability in Higher Education* (pp. 482-488). Cham: Springer Nature Switzerland AG.

Gino, F. (2018). *Rebel talent: Why it pays to break the rules at work and in life*. Pan Macmillan.

Godemann, J., Bebbington, J., Herzig, C., & Moon, J. (2014). Higher education and sustainable development Exploring possibilities for organisational change. *Accounting Auditing and Accountability Journal*, 27(2), 218-233. https://doi.org/10.1108/AAAJ-12-2013-1553.

Gough, G., & Longhurst, J. (2018). Monitoring Progress Towards Implementing Sustainability and Representing the UN Sustainable Development Goals (SDGs) in the Curriculum at UWE Bristol BT – Implementing Sustainability in the Curriculum of Universities: Approaches, Methods and Projects, in W. Leal Filho (Ed.). Cham: Springer International Publishing, (279-289). https://doi.org/ 10.1007/978-3-319-70281-0_17.

Griggs, D., Stafford-Smith, M., Gaffney, O., Rockström, J., Öhman, M.C., Shyam-sundar, P., Noble, I. (2013). Policy: Sustainable development goals for people and planet. *Nature*, 495(7441), 305-307.

Gröschl, S., & Pavie, X. (2020). Transdisciplinarity applied to management education: A case study. *Journal of Education for Business*, 95(7), 451-457. https://doi.org/10.1080/08832323.2019.1671781.

Hambleton, R. (2019). The New Civic Leadership: Place and the co-creation of public innovation. *Public Money & Management*, 39(4), 271-279. https://doi.org/10.1080/09540962.2019.1592908.

Hattie, J., & Yates, G.C.R. (2013). *Visible learning and the science of how we learn*. New York, NY, USA: Routledge.

Haynes, K. (2006). Linking narrative and identity construction: using autobiography in accounting research. *Critical Perspectives on Accounting*, 17(4), 399-418.

Haynes, K. (2011). Tensions in (re) presenting the self in reflexive autoethnographical research. *Qualitative Research in Organizations and Management: An International Journal*, 6(2), 134-149. https://doi.org/10.1108/17465641111159125.

Haynes, K. (2017). Autoethnography in accounting research, in Z. Hoque, L.D. Parker, M.A. Covaleski, & K. Haynes (Eds.), *The Routledge companion to qualitative accounting research methods*. New York, NY, USA: Routledge, 215-230.

Head, B.W., & Alford, J. (2015). Wicked problems: Implications for public policy and management. *Administration & Society*, 47(6), 711-739.

HESI (2019). *Annual SDG Accord Report 2019 Progress towards the Global Goals in the University and College sector*. New York, NY, USA.

Hofstede, G. (1986). Cultural differences in teaching and learning. *International Journal of Intercultural Relations*. https://doi.org/10.1016/0147-1767(86)90015-5.

Howard, T. (2011). *Anchor Institution and Urban Economic Development: From Community Benefit to Shared Value* (Vol. 1). Retrieved from http://icic.org/wp-content/uploads/2016/04/ICIC_Anchors-and-Urban-Econ-Dev.pdf?58f619.

Howlett, C., Ferreira, J.-A., & Blomfield, J. (2016). Teaching sustainable development in higher education. *International Journal of Sustainability in Higher Education*, 17(3), 305-321. https://doi.org/10.1108/IJSHE-07-2014-0102.

Ingallina, P., & Charles, D. (2018). *The Urban University and the Knowledge Economy: New Spaces of Interaction*. Abingdon: Taylor & Francis.

Ishikawa, K., & Loftus, J.H. (1990). *Introduction to quality control*. Tokyo: 3A Corporation.

Jandrić, P., Jaldemark, J., Hurley, Z., Bartram, B., Matthews, A., Jopling, M., Rothmüller, N. (2020). Philosophy of education in a new key: Who remembers Greta Thunberg? Education and environment after the coronavirus. *Educational Philosophy and Theory*, 1-21. https://doi.org/10.1080/00131857.2020.1811678.

Johnson, D.W., Johnson, R.T., Holubec, E.J., & Holubec, E.J. (1994). *The new circles of learning: Cooperation in the classroom and school*. ASCD.

Khan, T. (2013). Sustainability accounting courses, Talloires Declaration and academic research. *International Journal of Sustainability in Higher Education*, 14(1), 42-55. https://doi.org/10.1108/14676371311288949.

King, A. (1993). From sage on the stage to guide on the side. *College Teaching*, 41(1), 30-35.

King, K.P. (2007). The Transformation Model. *International Journal of Information and Communication Technology Education (IJICTE)*. https://doi.org/10.4018/jicte.2007040103.

Koester, R.J. (2013). The Sustainable University: Progress and Prospects. *Journal of Education for Sustainable Development*, 7(2), 249-252. https://doi.org/10.1177/0973408214526494.

Kolb, D.A., Boyatzis, R.E., & Mainemelis, C. (2001). Experiential learning theory: Previous research and new directions. *Perspectives on Thinking, Learning, and Cognitive Styles*, 1(8), 227-247.

König, A. (2015). Changing requisites to universities in the 21st century: Organizing for transformative sustainability science for systemic change. *Current Opinion in Environmental Sustainability*. https://doi.org/10.1016/j.cosust.2015.08.011.

Kuntz, A.M. (2006). Academic citizenship: The risks and responsibility of reframing faculty work. *Journal of College and Character*, 7(5).

Kysilka, M.L. (1998). Understanding integrated curriculum. *The Curriculum Journal*, 9(2), 197-209. https://doi.org/10.1080/0958517970090206.

Laredo, P. (2007). Revisiting the Third Mission of Universities: Toward a Renewed Categorization of University Activities? *Higher Education Policy*, 20(4), 441-456. https://doi.org/10.1057/palgrave.hep.8300169.

Larrán Jorge, M., Andrades Peña, F.J., & Herrera Madueño, J. (2019). An analysis of university sustainability reports from the GRI database: an examination of influential variables. *Journal of Environmental Planning and Management*, 62(6), 1019-1044. https://doi.org/10.1080/09640568.2018.1457952.

Le Blanc, D. (2017). Towards integration at last? The sustainable development goals as a network of targets. *Sustainable Development*, 23(3), 176-187.

Leal Filho, W., Manolas, E., & Pace, P. (2015). The future we want. *International Journal of Sustainability in Higher Education*, 16(1), 112-129. https://doi.org/10.1108/IJSHE-03-2014-0036.

Leal Filho, W., Shiel, C., Paço, A., Mifsud, M., Ávila, L.V., Brandli, L.L., Vargas, V.R. (2019). Sustainable Development Goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? *Journal of Cleaner Production*, 232, 285-294. https://doi.org/https://doi.org/10.1016/j.jclepro.2019.05.309.

Leal Filho, W., Vargas, V.R., Salvia, A.L., Brandli, L.L., Pallant, E., Klavins, M.,

Conticelli, E. (2019). The role of higher education institutions in sustainability initiatives at the local level. *Journal of Cleaner Production*.

Leal Filho, W., Will, M., Salvia, A.L., Adomssent, M., Grahl, A., & Spira, F. (2019). The role of green and Sustainability Offices in fostering sustainability efforts at higher education institutions. *Journal of Cleaner Production*, 232, 1394-1401. https://doi.org/doi:10.1016/j.jclepro.2019.05.273.

Lee, Y., Petroni, K.R., & Shen, M. (2006). Cherry picking, disclosure quality, and comprehensive income reporting choices: The case of property-liability insurers. *Contemporary Accounting Research*, 23(3), 655-692.

Lehmann, M., Christensen, P., Du, X., & Thrane, M. (2008). Problem-oriented and project-based learning (POPBL) as an innovative learning strategy for sustainable development in engineering education. *European Journal of Engineering Education*, 33(3), 283-295. https://doi.org/10.1080/03043790802088566.

Leminen, S., Westerlund, M., & Nyström, A. (2012). Living Labs as open-innovation networks. *Technology Innovation Management Re*, (September), 6-11.

Levin, K., Cashore, B., Bernstein, S., & Auld, G. (2007). Playing it forward: Path dependency, progressive incrementalism, and the 'Super Wicked'problem of global climate change. *International Studies Association 48th Annual Convention. Chicago, February*.

Leydesdorff, L. (2012). The Triple Helix, Quadruple Helix, ..., and an N-Tuple of Helices: Explanatory Models for Analyzing the Knowledge-Based Economy? *Journal of the Knowledge Economy*, 3(1), 25-35. https://doi.org/10.1007/s13132-011-0049-4.

Leydesdorff, L., & Etzkowitz, H. (1996). Emergence of a triple helix of university-industry-government relations. *Science and Public Policy*, 23(5), 279-286. https://doi.org/10.1093/spp/23.5.279.

Leydesdorff, L., & Meyer, M. (2003). The Triple Helix of university-industry-government relations. *Scientometrics*. https://doi.org/10.1023/A:1026276308287.

Ling, L. (2020). Universities and research in times of crisis: the getting of wisdom. *Qualitative Research Journal*, *EarlyCite*, 1-11. https://doi.org/10.1108/QRJ-06-2020-0055.

Lozano, R. (2011). The state of sustainability reporting in universities. *International Journal of Sustainability in Higher Education*, 12(1), 67-78. https://doi.org/10.1108/14676371111098311.

Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., Lozano, F.J., Waas, T., Hugé, J. (2015). A review of commitment and implementation of sustainable development in higher education: Results from a worldwide survey. *Journal of Cleaner Production*, 108, 1-18. https://doi.org/10.1016/j.jclepro.2014.09.048.

Lozano, R., Merrill, M., Sammalisto, K., Ceulemans, K., & Lozano, F. (2017). Connecting Competences and Pedagogical Approaches for Sustainable Development in Higher Education: A Literature Review and Framework Proposal. *Sustainability*, 9(11), 1889. https://doi.org/10.3390/su9101889.

Lugg, A. (2007). Developing sustainability-literate citizens through outdoor

learning: possibilities for outdoor education in Higher Education. *Journal of Adventure Education & Outdoor Learning*, 7(2), 97-112. https://doi.org/10.1080/14729670701609456.

Lyons, M., Smuts, C., & Stephens, A. (2001). Participation, empowerment and sustainability: (How) do the links work? *Urban Studies*. https://doi.org/10.1080/00420980125039.

MacVaugh, J., & Norton, M. (2012). Introducing sustainability into business education contexts using active learning. *International Journal of Sustainability in Higher Education*, 13(1), 72-87. https://doi.org/10.1108/14676371211190326.

Martí, I. (2018). Transformational Business Models, Grand Challenges, and Social Impact. *Journal of Business Ethics*, 152(4), 965-976. https://doi.org/10.1007/s10551-018-3824-3.

Martin-Sardesai, A., Guthrie, J., & Parker, L. (2020, January 1). The neoliberal reality of higher education in Australia: how accountingisation is corporatising knowledge. *Meditari Accountancy Research*. https://doi.org/10.1108/MEDAR-10-2019-0598.

Mauro, S.G., Cinquini, L., Simonini, E., & Tenucci, A. (2020). Moving from Social and Sustainability Reporting to Integrated Reporting: Exploring the Potential of Italian Public-Funded Universities' Reports. *Sustainability*, 12(8), 3172. https://doi.org/10.3390/su12083172.

Mauser, W., Klepper, G., Rice, M., Schmalzbauer, B.S., Hackmann, H., Leemans, R., & Moore, H. (2013). Transdisciplinary global change research: The co-creation of knowledge for sustainability. *Current Opinion in Environmental Sustainability*, 5(3-4), 420-431. https://doi.org/10.1016/j.cosust.2013.07.001.

McAdam, M., Miller, K., & McAdam, R. (2016). Situated regional university incubation: a multi-level stakeholder perspective. *Technovation*, 50, 69-78.

Medina, M.S., Melchert, R.B., & Stowe, C.D. (2020). The COVID-19 pandemic across the academy. Fulfilling the Tripartite Mission During a Pandemic. *American Journal of Pharmaceutical Education*, 84(6), 683-687. https://doi.org/10.5688/ajpe8468156.

Meseguer-Sánchez, V., Abad-Segura, E., Belmonte-Ureña, L.J., & Molina-Moreno, V. (2020). Examining the Research Evolution on the Socio-Economic and Environmental Dimensions on University Social Responsibility. *International Journal of Environmental Research and Public Health*, 17(13), 4729. https://doi.org/10.3390/ijerph17134729.

Mezirow, J. (1991). Transformative Learning: Theory to Practice Transformative Learning Theory. *Transformative Learning*. https://doi.org/10.1002/ace.7401.

Mezirow, J. (2000). Learning to Think Like an Adult: Core Concepts of Transformation Theory, in *Learning as Transformation. Critical Perspectives on a Theory in Progress*. (pp. 3-33).

Miller, K., McAdam, M., & McAdam, R. (2014). The changing university business model: a stakeholder perspective. *R&D Management*, 44(3), 265-287.

Miller, K., McAdam, R., & McAdam, M. (2016). A systematic literature review of university technology transfer from a quadruple helix perspective: toward a research agenda. *R&D Management*, n/a-n/a. https://doi.org/10.1111/radm.12228.

Mitroff, I. (2011). The rise and the fall of business schools: An autobiography. *World Futures*, 67(4-5), 244-252.

Moggi, S. (2016). *Il sustainability reporting nelle università* (Vol. 2): Rimini, Maggioli Editore.

Moggi, S. (2019). Social and environmental reports at universities: a Habermasian view on their evolution. *Accounting Forum*, 43(3), 283-326. https://doi.org/10.1080/01559982.2019.1579293.

Moggi, S., Leardini, C., & Campedelli, B. (2015). Social and Environmental Reporting in the Italian Higher Education System: Evidence from Two Best Practices, in *Integrative Approaches to Sustainable Development at University Level* (pp. 81-96). Springer International Publishing.

Molthan-Hill, P. (2017). *The business student's guide to sustainable management: Principles and practice*. London, UK: Routledge.

Molthan-Hill, P., Dharmasasmita, A., & Winfield, F.M. (2016). Academic freedom, bureaucracy and procedures: the challenge of curriculum development for sustainability, in J.P. Davim & W. Leal Filho (Eds.), *Challenges in Higher Education for Sustainability*. Cham: Springer International Publishing Switzerland, 199-215. https://doi.org/https://doi.org/10.1007/978-3-319-23705-3.

Neumayer, E. (1999). *Weak versus strong sustainability* (Vol. 1736). Edward Elgar Publishing.

Nilsson, M., Chisholm, E., Griggs, D., Howden-Chapman, P., McCollum, D., Messerli, P., Stafford-Smith, M. (2018). Mapping interactions between the sustainable development goals: Lessons learned and ways forward. *Sustainability Science*, 13(6), 1489-1503.

O'Connell, T.S., Potter, T.G., Curthoys, L.P., Dyment, J.E., & Cuthbertson, B. (2005). A call for sustainability education in post-secondary outdoor recreation programs. *International Journal of Sustainability in Higher Education*, 6(1), 81-94. https://doi.org/10.1108/14676370510573159.

O'Sullivan, E., Morrell, A., & O'Connor, M.A. (2002). *Expanding the boundaries of transformative learning: Essays on theory and praxis*. New York: Palgrave Macmillan. https://doi.org/https://doi.org/10.1007/978-1-349-63550-4.

Ortiz, D., & Huber-Heim, K. (2017). From information to empowerment: Teaching sustainable business development by enabling an experiential and participatory problem-solving process in the classroom. *International Journal of Management Education*, 15(2), 318-331. https://doi.org/10.1016/j.ijme.2017.03.008.

Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers. A handbook for visionaries, game changers, and challengers*. Hoboken, NJ: John Wiley & Sons.

OXFAM (2020). *Confronting Carbon Inequality. Putting climate justice at the heart of the COVID-19 recovery.* Retrieved from https://oxfamilibrary.open repository.com/ bitstream/handle/10546/621052/mb-confronting-carbon-inequality-210920-en.pdf.

Oztel, H. (2020). Fourth Generation University: Co-creating a Sustainable Future, in W. Leal Filho, A.M. Azul, L. Brandli, P.G. Özuyar, & T. Wall (Eds.), *Quality Education. Encyclopedia of the UN Sustainable Development Goals* (pp. 316-328). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-95870-5_77.

Painter-Morland, M., Sabet, E., Molthan-Hill, P., Goworek, H., & de Leeuw, S. (2015). Beyond the Curriculum: Integrating Sustainability into Business Schools. *Journal of Business Ethics*, 139(4), 737-754. https://doi.org/10.1007/s10551-015-2896-6.

Palma, L.C., & Pedrozo, E.Á. (2015). Complex matrix for the analysis of sustainable transformative learning: an assessment methodology of sustainability integration in universities. *Assessment & Evaluation in Higher Education*, 40(6), 817-832.

Pappas, E. (2012). A New Systems Approach to Sustainability: University Responsibility for Teaching Sustainability in Contexts. *Journal of Sustainability Education*, 3(March).

Parker, L.D. (2002). It's been a pleasure doing business with you: a strategic analysis and critique of university change management. *Critical Perspectives on Accounting*, 13(5-6), 603-619. https://doi.org/10.1006/cpac.2002.0561.

Parker, L.D. (2011). University corporatisation: Driving redefinition. *Critical Perspectives on Accounting*, 22(4), 434-450. https://doi.org/10.1016/ j.cpa.2010.11.002.

Parker, L.D. (2013). Contemporary University Strategising: The Financial Imperative. *Financial Accountability & Management*, 29 (February), 1-25. https://doi.org/ 10.1111/faam.12000.

Peer, V., & Penker, M. (2016). Higher education institutions and regional development: a meta-analysis. *International Regional Science Review*, 39(2), 228-253.

Piaget, J. (1972). L'Epistémologie des Relations Interdisciplinaires. *L'interdiciplinarité: problèmes d'enseignement et de recherche dans les universités.* Paris: OCDE.

Pohl, C., Truffer, B., & Hirsch Hadorn, G. (2017). Addressing wicked problems through transdisciplinary research, in R. Frodeman (Ed.), *The Oxford Handbook of Interdisciplinarity*. Oxford, UK: Oxford University Press, 319-331. https://doi.org/ 10.1093/oxfordhb/9780198733522.013.26.

Porter, M.E., & Kramer, M.R. (2011). Creating Shared Value. *Harvard Business Review*, 89(1/2), 62-77. https://doi.org/10.1108/09600039410055963.

Raaper, R., & Brown, C. (2020). The Covid-19 pandemic and the dissolution of the university campus: implications for student support practice. *Journal of Professional Capital and Community*, *Early Cite*, 1-7. https://doi.org/10.1108/ JPCC-06-2020-0032.

Report of the World Commission on Environment and Development. (1987). New

York: Oxford University Press. Retrieved from http://www.un-documents.net/our-common-future.pdf.

Rittel, H.W.J., & Webber, M.M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), 155-169. https://doi.org/10.1007/BF01405730.

Rockström, J., & Klum, M. (2015). *Big world, small planet: Abundance within planetary boundaries*. *Big World, Small Planet: Abundance within Planetary Boundaries*. https://doi.org/10.5860/choice.194600.

Rogers, M., Pfaff, T., Hamilton, J., & Erkan, A. (2015). Using sustainability themes and multidisciplinary approaches to enhance STEM education. *International Journal of Sustainability in Higher Education*, 16(4), 523-536. https://doi.org/10.1108/IJSHE-02-2013-0018.

Rolfo, S., & Finardi, U. (2014). University Third mission in Italy: organization, faculty attitude and academic specialization. *The Journal of Technology Transfer*, 39(3), 472-486. https://doi.org/10.1007/s10961-012-9284-5.

Roome, N. (2012). Looking back, thinking forward: Distinguishing between weak and strong sustainability, in P. Bansal & A.J. Hoffman (Eds.), *The Oxford handbook of business and the natural environment*. Oxford, UK: Oxford Univ. Press. https://doi.org/10.1093/oxfordhb/9780199584451.003.0034.

Rosenblum, M., Schroeder, J., & Gino, F. (2020). Tell it like it is: When politically incorrect language promotes authenticity. *Journal of Personality and Social Psychology*, 119(1), 75.

Rousell, D. (2016). Dwelling in the Anthropocene: Reimagining University Learning Environments in Response to Social and Ecological Change. *Australian Journal of Environmental Education*, 32(2), 137-153. https://doi.org/DOI: 10.1017/aee.2015.50.

Rusinko, C.A., & Sama, L M. (2009). Greening and sustainability across the management curriculum: An extended journey. *Journal of Management Education*, 33(3), 271-275.

Ryan, J. (2005). Improving teaching and learning practices for international students. *Teaching International Students: Improving Learning for All*, 92-100.

Salonen, A.O., & Siirilä, J. (2019). Transformative Pedagogies for Sustainable Development, in *Encyclopedia of Sustainability in Higher Education*. https://doi.org/10.1007/978-3-319-63951-2_369-1.

Samkin, G., & Schneider, A. (2014). The accounting academic. *Meditari Accountancy Research*, 22(1), 2-19. https://doi.org/https://doi.org/10.1108/MEDAR-05-2014-0041.

Sayers, E.L.P., Craig, C.A., Gilbertz, S., Feng, S., & Karam, R.T. (2020). Advancing STEM-Based Business Sustainability : Mending the Curricular Gap. https://doi.org/10.1177/2379298119852313.

Schneider, A. (2015). Reflexivity in sustainability accounting and management: Transcending the economic focus of corporate sustainability. *Journal of Business Ethics*, 127(3), 525-536.

Sherren, K. (2005). Balancing the Disciplines: A Multidisciplinary Perspective on

Sustainability Curriculum Content. *Australian Journal of Environmental Education*, 21, 97-106.

Skilbeck, A. (2020). 'A thin net over an abyss': Greta Thunberg and the Importance of Words in Addressing the Climate Crisis. *Journal of Philosophy of Education*, 54(4), 960-974. https://doi.org/10.1111/1467-9752.12485.

Sonetti, G., Lombardi, P., & Chelleri, L. (2016). True Green and Sustainable University Campuses? Toward a Clusters Approach. *Sustainability*, 8(1). https://doi.org/10.3390/su8010083.

Spangenberg, J.H. (2017). Hot Air or Comprehensive Progress? A Critical Assessment of the SDGs. *Sustainable Development*, 25(4), 311-321. https://doi.org/10.1002/sd.1657.

Steffen, W., Richardson, K., Rockström, J., Cornell, S.E., Fetzer, I., Bennett, E.M., Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*. https://doi.org/10.1126/science.1259855.

Sterling, S. (2011). Transformative learning and sustainability: Sketching the conceptual ground. *Learning and Teaching in Higher Education*, 5(11), 17-33.

Sterling, S., Maxey, L., Luna, H., & Parkin, S. (2013). *The sustainable university: Progress and prospects. The Sustainable University: Progress and Prospects*. Abingdon: Routledge/Earthscan. https://doi.org/10.4324/9780203101780.

Sterling, S., & Thomas, I. (2006). Education for sustainability: the role of capabilities in guiding university curricula. *International Journal of Innovation and Sustainable Development*, 1(4), 349-370.

Stough, T., Ceulemans, K., Lambrechts, W., & Cappuyns, V. (2018). Assessing sustainability in higher education curricula: A critical reflection on validity issues. *Journal of Cleaner Production*, 172, 4456-4466. https://doi.org/https://doi.org/10.1016/j.jclepro.2017.02.017.

Sunley, R., & Leigh, J.S.A. (2017). Introduction, in R. Sunley & J.S.A. Leigh (Eds.), *Educating for Responsible Management. Putting Theory into Practice*. London, UK: Routledge, 1-12.

Svanström, M., Lozano-García, F.J., & Rowe, D. (2008). Learning outcomes for sustainable development in higher education. *International Journal of Sustainability in Higher Education*, 9(3), 339-351. https://doi.org/10.1108/14676370810885925.

Teelken, C., & Deem, R. (2013). All are equal, but some are more equal than others: Managerialism and gender equality in higher education in comparative perspective. *Comparative Education*, 49(4), 520-535.

Tejedor, G., Segalàs, J., & Rosas-Casals, M. (2018). Transdisciplinarity in higher education for sustainability: How discourses are approached in engineering education. *Journal of Cleaner Production*, 175, 29-37. https://doi.org/https://doi.org/10.1016/j.jclepro.2017.11.085.

UNECE (2012). Learning for the future: competences in education for sustainable development.

UNESCO (2014). Global action programmed on education for sustainable development. Retrieved from https://en.unesco.org/gap.

UNESCO (2017a). Education for sustainable development goals learning objectives.

UNESCO (2017b). *Unpacking Sustainable Development Goal 4 Education 2030*. Retrieved from http://unesdoc.unesco.org/images/0024/002463/246300E.pdf.

UNESCO Education (2015). *United Nations Decade of Education for Sustainable Development (2005-2014): International Implementation Scheme. UN Education*. Paris.

United Nations (2015). Sustainable Development Goals. Retrieved from http://www.un.org/sustainabledevelopment/sustainable-development-goals/.

Universities UK (2020). *Achieving stability in the higher education sector following COVID-19*. Retrieved from https://universitiesuk.ac.uk/news/Documents/uuk_achieving-stability-highereducation-%0Aapril-2020.pdf.

Van Wynsberghe, R., & Moore, J.L. (2015). UN decade on education for sustainable development (UNDESD): enabling sustainability in higher education. *Environment, Development and Sustainability*, 17(2), 315-330. https://doi.org/10.1007/s10668-014-9606-x.

Venditti, M., Reale, E., & Leydesdorff, L. (2013). Disclosure of university research to third parties: A non-market perspective on an Italian university. *Science and Public Policy*, 40(6), 792-800. https://doi.org/10.1093/scipol/sct027.

Verhoef, L.A., Bossert, M., Newman, J., Ferraz, F., Robinson, Z.P., Agarwala, Y., Hellinga, C. (2020). *Towards a Learning System for University Campuses as Living Labs for Sustainability. World Sustainability Series*. https://doi.org/10.1007/978-3-030-15604-6_9.

Waas, T., Verbruggen, A., & Wright, T. (2010). University research for sustainable development: definition and characteristics explored. *Journal of Cleaner Production*, 18(7), 629-636.

Waters, C.N., Zalasiewicz, J., Summerhayes, C., Barnosky, A.D., Poirier, C., Gałuszka, A., Wolfe, A.P. (2016). The Anthropocene is functionally and stratigraphically distinct from the Holocene. *Science*. https://doi.org/10.1126/science.aad2622.

Weitz, N., Henrik, C., Nilsson, M., & Skanberg, K. (2018). Towards systemic and contextual priority setting for implementing the 2030 Agenda. *Sustainability Science*, 13, 531-548. https://doi.org/https://doi.org/10.1007/s11625-017-0470-0.

Weitz, N., Nilsson, M., & Davids, M. (2014). A Nexus approach to the post-2015 Agenda: formulating integrated water, energy and food SDGs. *Review of International Affairs*, 34(2), 37-50. https://doi.org/10.1353/sais.2014.0022.

Werhane, P.H. (2008). Mental Models, Moral Imagination and System Thinking in the Age of Globalization . *Journal of Business Ethics*, 78(3), 463-474. https://doi.org/10.1007/s10551-006-9338-4.

Wiek, A., Bernstein, M., Foley, R., Cohen, M., Forrest, N., Kuzdas, C., Withycombe Keeler, L. (2016). Operationalising competencies in higher education for sustaina-

ble development, in M. Barth, G. Michelsen, M. Rieckmann, & I. Thomas (Eds.), *Handbook of higher education for sustainable development*. New York, NY, USA: Routledge, 241-260.

Wiek, A., Bernstein, M.J., Laubichler, M., Caniglia, G., Minteer, B., & Lang, D.J. (2013). A Global Classroom for International Sustainability Education. *Creative Education*. https://doi.org/10.4236/ce.2013.44a004.

Wiek, A., Withycombe, L., & Redman, C.L. (2011). Key competencies in sustainability: a reference framework for academic program development. *Sustainability Science*, 6(2), 203-218.

Yalin, L., Erli, D., Yiwei, G., Xiaohua, S., & Xiaoyan, L. (2019). Government-led Sustainability Reporting by China's HEIs. *Journal of Cleaner Production*, 230, 445-459. https://doi.org/https://doi.org/10.1016/j.jclepro.2019.04.360.

Acknowledgements

BUSINESS ADMINISTRATION AND ACCOUNTING STUDIES

Volumi pubblicati

1. E. GIACOSA-A. MAZZOLENI, *I modelli di previsione dell'insolvenza aziendale. Efficacia predittiva, limiti e prospettive di utilizzo*, pp. X-174, 2018.

2. D. BUSSO, *L'introduzione del* fair value *per la valutazione dei derivati. Analisi teorica ed empirica degli effetti sul modello di bilancio italiano*, pp. XII-204, 2019.

3. E. TRUANT, *The Business Model of organic companies. Sustainability approaches through districts*, pp. XIV-162, 2019.

4. S. FIANDRINO, *Disclosure of Non-Financial Information: Evolutionary Paths and Harmonisation to Mandatory Requirements*, pp. XII-164, 2019.

5. L. CORVO-L. PASTORE, *Perspectives of Value Co-Creation: Impact-Based Models*, pp. XII-148, 2019.

6. S. SECINARO, *Blockchain e accounting*, pp. XIV-114, 2020.

7. M. MAZZOLENI, *L'indebitamento finanziario nelle piccole e medie imprese. Vincolo o acceleratore nel processo di crescita?*, pp. XIV-274, 2020.

8. M. CISI, *Le reti di imprese. Una analisi economico-aziendale*, pp. XVI-144, 2020.

9. R. FRONDIZI, *La Terza Missione delle Università*, pp. XII-212, 2020.

10. V. BRESCIA, *Smart city e citizen participation: strumenti, governance e performance*, pp. X-262, 2020.

11. A. SARDI-P. GARENGO-E. SORANO, *La misurazione e la gestione delle prestazioni: il ruolo chiave della gestione delle risorse umane*, pp. VI-122, 2020.

12. P. ESPOSITO, *Concessioni e accordi per servizi in concessione. Profili teorici, modelli di business, trattamento contabile*, pp. XIV-146, 2020.

13. F. RIZZATO, *Il trattamento contabile dei leasing tra IFRS e US GAAP. Tendenze evolutive,* literature review *e contesto italiano*, pp. VIII-184, 2020.

14. P. CATALFO, *Il carattere evolutivo del bilancio e il valore delle informazioni non finanziarie*, pp. XIV-130, 2020.

15. L. CORAZZA, *Sustainability education for future managers. An autoethnographic research experience on transformational learning*, pp. X-118, 2020.