Chapter 3

Higher Education and Sustainable Development: A Literature Analysis and Conceptual Overview

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Abstract

In this chapter, the authors employ bibliometric, co-word, and thematic analyses to explore the scientific intersection between higher education (HE) and sustainable development (SD). In particular, the authors analyze a dataset of 215 articles extracted through the Scopus database to understand how the literature debates sustainability and HE. After providing a detailed description of the methodology employed, the authors perform a descriptive and thematic analysis of the dataset. The authors outline general information about the database, the formula applied to search for the results, and the methods used to polish the dataset. The authors then determine the number of publications per year and the number of papers per journal; consider the most used keywords; and build a thematic map based on the co-occurrence network. Lastly, the authors discuss the results and the limitations of our work, providing some indications for future research opportunities.

Keywords: Higher education; higher educational institutions; economic growth; sustainability; sustainable development; bibliometric analysis; co-word analysis; thematic analysis
Introduction

There have been serious repercussions of the rapid increase in the world’s population in recent decades and the consequent increase in business activities on the natural environment, and this is quite apparent even though some may still deny it (Ferkany, 2015). We are endangering the survival of future generations and even compromising the equilibrium of the Earth’s natural ecosystems. The need of the hour is, therefore, immediate change in our behaviour with the aim of managing Earth’s resources more rationally and efficiently and achieving SD (Tomislav, 2018).

Criticisms, thoughts, and ideas about establishing an ‘equilibrium’ between human activities and the Earth’s lifecycle emerged at the time of the Industrial Revolution (if not before), and have been present in some form ever since. Indeed, the ‘law of progress’ which is linked to economic growth and material advancement, has been prevalent since the end of the twentieth century, leading to the belief that human technology is predominant and can solve all problems (Du Pisani, 2006), and that humans must dominate the natural order and radically transform it into consumer goods to improve their lives (Worster, 1993). In fact, the overarching acceptance of development as being synonymous with economic development until recently is illustrated through the use of the label underdeveloped areas (later Third World countries), coined during the 1950s, to refer to countries with a significantly lower standard of living than ‘developed’ countries; these standards were measured by the countries’ capacity to exploit their natural resources to transform people’s lives (Estevo, 2010).

Although its origins can be traced to the 1969 National Environmental Policy Act and the consequent development of the Social Impact Assessment (Antonucci & Venditti, 2019), SD emerged as a result of two events: the first United Nations (UN) Conference on the Human Environment, held in Stockholm in 1972, and the consequent coining of the term eco-development in the UN Environment Programme (UNEP) published in 1978 (Mebratu, 1998), which led to the creation of the UN World Commission on Environment and Development (WCED) in 1983. It was the WCED that first agreed on the definition of SD in 1987, signifying the ‘birth’ of the concept at a global level: ‘Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (WCED, 1987, p. 43).

Thirty-six years after its initial definition, SD is commonly understood to refer to the development of all people in perpetuity, based on the capacity to maintain some entity, outcome, or process over time (Jenkins, 2009). SD propounds the establishment and maintenance of an equilibrium wherein human action and its consequent resource utilization meet human needs, including those of future generations (Beckerman, 1992). It represents the overturning of the view that sustainability and economic development are contradictory concepts (Lélé, 1991). Instead, SD asserts that ‘there is no development without sustainability or sustainability without development’ (Sachs, 2010, p. 28). SD represents a delicate balance in which human needs are satisfied, and simultaneously, the Earth’s natural resources and ecosystems – on which both we and future generations depend – are protected (Singh, 2022).
Towards the end of the twentieth century and especially the beginning of the new millennium, concurrent with the establishment of the definition of SD, there was emphasis on the great need to reverse the situation at the global level. The first global programme with this aim was Agenda 21, part of the UN Conference on Environment and Development, which took place in Rio de Janeiro in 1992. The aim of Agenda 21 was to establish objectives to be achieved by all nations by the year 2021, following specific paths in different fields managed by corresponding agencies (e.g. the World Health Organisation [WHO], Food and Agriculture Organisation [FAO], and United Nations Educational, Scientific and Cultural Organisation [UNESCO]) (UN, 1992).

Unfortunately, after a few years, it became clear that countries were not achieving the established targets because the required changes could not be implemented easily, resulting in a lack of commitment to strong sustainable consumption (Fuchs & Lorek, 2005). Thus, in 2015, the UN adopted the 2030 Agenda for Sustainable Development, representing the new consensual basis for SD. Particularly, this agenda outlines how the international community ought to work together to ensure a future for all people and the planet (UN, 2015). The 2030 Agenda comprises of 17 sustainable development goals (SDGs) that are global, generally applicable, and interconnected, although each of them has its targets (169 in total). Regardless of the increasing consciousness of and commitment to SD, agreement about its relevance is still lacking within academia, government agencies, and private enterprises (Broman & Robert, 2017). This is caused, in part, by the fact that some people continue to reject the need for SD (Dernbach & Cheever, 2015) and that the distance between actors and action outcomes can obstruct responsibility (Bonnedahl, Heikkurinen, & Paavola, 2022).

This chapter discusses the above-mentioned situation in detail; without having the boldness to attempt to solve the whole problem, it intends to contribute to the study of SD by focusing its analysis on the interconnections between SD and HE. The relevance of HE to themes related to SD is primarily demonstrated by the inclusion of access to quality education as number 4 on the list of 17 SDGs in the 2030 Agenda. Firstly, as noted above, SD is a relatively recent construct that is overturning the ‘law of progress’ that was predominant for centuries. Such a dramatic change in the consideration of human beings and their interaction with the planet must be explained, demonstrated, and taught to be accepted by the majority of the population. In this sense, it is necessary to start from the perspective of HE, given that HE is fundamental to achieving global learning on this subject (Kahn & Agnew, 2017).

Secondly, it is necessary to address the fact that some people continue to deny the equilibrium risks facing our planet or are opposed to the application of SD principles. The assertion that ‘there is no development without sustainability or sustainability without development’ (Sachs, 2010, p. 28) must become one that is commonly agreed upon. Yet it cannot be imposed; instead, sustainable paths must be demonstrated and explained. In this sense, once again, knowledge transfer through HE represents a strategic route.

Thirdly, SD is inextricably linked with future generations. Because of this, most young people are demonstrating a greater sensibility towards issues related
to SD, speaking about it in a different way, one that is often in contrast with that of adults (Holmberg & Alvinius, 2020). Many are now following the example of Greta Thunberg, who (we think it was not by chance) started a global movement by leading students in school strikes on Fridays (Murphy, 2021). This implicitly recognizes the importance of both HE and SD for young people.

Lastly, and perhaps most importantly, SD can be achieved only if the majority of people become aware of it and choose to engage in pro-environmental behaviours. Accordingly, education is one of the influential factors that can persuade people to consciously perform positive daily behaviours (Kollmuss & Agyeman, 2002).

Considering the above context, in this chapter, we employ bibliometric, co-word, and thematic analysis (Lamboglia, Lavorato, Scornavacca, & Za, 2021) to explore the scientific intersection between HE concepts and SD to understand how the literature debates SD and HE. The aim is to identify insights about how future research in this field can be improved and practical insights about what it is needed to advance the general acceptance of SD principles. The chapter is structured as follows. The next section describes the methodology we used to develop the study. Then, we present the descriptive and thematic analysis of the dataset. A discussion of the findings, including the identification of future research opportunities, concludes the chapter.

Methodology

We used the Scopus database to gather the most comprehensive group of articles debating the intersection between HE and SD and performed two separate extractions. Firstly, we employed the following formula: TITLE-ABS-KEY (high* AND educate* AND sustain* AND develop*). This gave 20,892 results. We next limited the results to the articles published in English and scientific peer-reviewed journals. Implementing these limitations resulted in 12,440 articles. Further, we considered only the papers published in journals appearing in the Chartered Association of Business Schools (ABS) 2021 list and ranking as 3, 4, or 4*. We applied the following formula in the second round of extractions: TITLE-ABS-KEY (sustain* AND develop*). Here also, we considered only the journals with higher education in their names. We employed the same limitations applied for the first extraction, obtaining a dataset of 264 articles. We then joined the two datasets, obtaining 527 papers in total, and checked for duplicates. Last, we checked titles, abstracts, and keywords to eliminate false positives, obtaining a final database of 215 articles.

In following these article identification steps, we found 33 articles without keywords; however, from the remaining articles, we compiled a consistent set of keywords by analyzing titles and abstracts. We also homogenized the 782 keywords appearing in the entire dataset to obtain a final set of 752 keywords. The entire dataset and the modified keywords are available upon request. At this point, the dataset was polished, and we could begin the analysis.

We employed bibliometric, co-word and thematic analysis to conduct the investigation using bibliometrix, the R package for bibliometric analysis (Pizzolitto &
In the following paragraph, we present a descriptive exploration of the dataset, considering the number of contributions per journal and the trend in the number of publications per year. Then, we show the analysis of the most employed keywords and the thematic analysis based on the co-occurrence network.

### Descriptive Analysis of the Dataset

The 215 articles included in the dataset spanned 50 years, being published between 1973 and 2022. The dataset included 41 journals, an average of 19.56 citations per article, and an average of 2.326 citations per year per document. Moreover, the database included 495 authors, of which 75 were sole contributors and the remaining 420 were co-contributors. It was further found that an average of 0.434 documents was published per author, with 2.39 co-authors per document and a collaboration index of 3.02. These findings comprise the preliminary information gathered about the dataset.

Fig. 3.1 shows the number of contributions per journal. Most of the articles were published in journals focusing on HE and related subjects. In particular, 19.53% of the articles were published in *Higher Education*, 17.21% in *Industry and Higher Education*, 13.02% in *Higher Education Policy*, 11.16% in *Studies in Higher Education*, and 8.84% in *Higher Education, Skills, and Work-Based Learning*. Together, these five journals made up 69.77% of the entire dataset. Nevertheless, fields other than HE also made up a considerable percentage of the articles; for example, 3.72% of the articles related to the field of innovation, 2.33% to social...
science, and 1.86% to accounting. The remaining 7.91% of the articles related to 12 different fields, including economics, entrepreneurship, and the public sector. This breakdown demonstrates the highly multidisciplinary nature of HE.

The publication trend shows an increasing number of relevant articles being published per year (Fig. 3.2). In particular, we found a peak of 28 articles in 2021. Nevertheless, 10 articles had already been published by the extraction date (March 2022), meaning that 2022 may surpass the previous year as the new peak of publications. Furthermore, before the year 2000, the average number of publications was 1.22 per year; in the 2000s and 2010s, the average number of publications was 4.8 and 10.5, respectively. Finally, from 2020 to 2022, the average was 17. Thus, the number of publications will likely continue to increase during the following decades.

**Analysis of most used Keywords**

Fig. 3.3 shows the 22 most used keywords in the dataset; specifically, those that were used at least four times. In this section, we explore the topics debated by the articles that used the three most frequent keywords: higher education, sustainable development, and sustainability.

The keyword higher education was used 45 times. However, the most cited papers that used this keyword belonged to different fields. For example, Marginson (2016), with 231 citations, debated inclusion issues and social stratification. Sterlacchini (2008), with 99 citations, considered the intersection between research and development, HE, and regional growth. In particular, the paper reflected on the economic and knowledge growth of European regions, focusing on human capital endowments. Stes, Coertjens, and van Petegem (2010), with 61 citations, debated instructional development for teachers and its impact on ordinary teaching activities. He (2015), with 60 citations, debated studentification in Guangzhou, a region in Southern China. Finally, Shephard and Furnari (2013),
with 40 citations, considered university professors’ perceptions of sustainability education.

The keyword *sustainable development* was used 25 times in the dataset. Unlike the keyword *higher education*, the most cited papers for *sustainable development* concentrated on the role of HE and HE institutions in producing and applying sustainability knowledge in society. A considerable impact was made by Cotton, Bailey, Warren, and Bissell (2009), with 102 citations. They reflected on SD education in universities by conducting in-depth interviews with academics who underlined issues related to the constraining variables that limit the application of a holistic approach that allows curricula to integrate the concepts of sustainability into ordinary teaching routines. In addition, 2 articles gained 40 citations: Godemann, Bebbington, Herzig, and Moon (2014) and Shephard and Furnari (2013). The former debated the critical role of HE institutions in the path towards SD because they allow debate on and shape SD values. The latter has been described above. Finally, Okolie (2003), with 30 citations, debated the role of HE in developing SD knowledge in Africa.

The keyword *sustainability* was used 24 times in the dataset. The most cited articles that include this keyword focused on the impact of HE institutions. The most cited paper that included the keyword *sustainability* was Filho (2011), with 136 citations. The article debated the role of universities in SD. In particular, it considered the issues that arise when integrating sustainable practices into HE institutions. Shriberg (2002) considered a similar topic: the measurement of sustainability across HE institutions; specifically, the article reflected on the critical

![Fig. 3.3. Most Used Keywords. Source: Authors’ own.](image-url)
parameters to achieving sustainability in HE, such as ‘decreasing throughput; pursuing incremental and systemic change simultaneously; including sustainability education as a central part of curricula; and engaging in cross-functional and cross-institutional efforts’ (Shriberg, 2002, p. 153). Chowdhury (2011) gained 51 citations, debating a specific aspect related to the information systems used by HE institutions. The article identified a dangerous level of greenhouse gas emissions coming from the information systems and information services of HE institutions. It emphasized the need to recognize the critical role that cloud computing could play in creating green information services.

**Thematic Analysis**

Fig. 3.4 shows the thematic map developed through an analysis of the co-occurrence network. The elements and dimensions of the co-occurrence network are nodes, ties, and thickness. Nodes represent the keywords used in the articles; ties represent the contemporary mention of the keyword in two articles; and thickness represents the number of publications in which the pairs appear (Za, Pallud, Agrifoglio, & Metallo, 2020). Elaboration of this graph allows for the creation of a thematic map (Cobo, López-Herrera, Herrera-Viedma, & Herrera, 2011) along two dimensions: density and centrality (Scornavacca, Paalone, Za, & Martiniello, 2020). The former represents the degree of development of the topic, that is, the strength of the network. The latter represents the degree of interaction of the network with other networks.

Fig. 3.4. Thematic Map. *Source*: Authors’ own.
The attribution of the two dimensions (i.e. density and centrality) to the topics debated in the relevant fields (i.e. to the keywords) allows for the distribution of the themes into four different groups:

1. Motor themes are included in the top-right quadrant. They show high levels of centrality and density. Therefore, they are well-developed and highly connected with other conceptually closely related themes.

2. Isolated topics and niches are included in the top-left quadrant. They show high levels of density but low levels of centrality. Therefore, they are well-developed and specialized but peripheral to the field.

3. Emerging and declining themes are included in the bottom-left quadrant. They show low levels of density and centrality. Therefore, they are still underdeveloped and have still not found a central position in the field. Alternatively, they have been developed, but the interest in the themes throughout the field is declining; therefore, they have been losing centrality and density.

4. Transversal, general, and basic themes are included in the bottom-right quadrant. They show high levels of centrality but low levels of density. Therefore, they are not well developed but are highly interconnected with related themes.

**Motor Themes**

The most relevant cluster includes the themes of *work-based learning* and *education policy*, shown in the top-right quadrant. Collaborative learning and sustainability are firmly related in the emerging knowledge society, in which the integration between learning and working is critical for the development of knowledge networks (*Kessels & Kwakman, 2007*). The competencies needed to guide SD are technical, relational, and transformative. Professionals gain such competencies through theoretical and practical learning (*Rosenberg, Lotz-Sisitka, & Ramsarup, 2018*). For this reason, the integration of SD in HE programmes and curricula should be pursued through the interaction between HE institutions and industry, especially through work-based learning policy and practice (*Crawford-Lee & Wall, 2018*).

*Leadership* and *organisational learning* are the other motor themes that were identified. Although the position of this cluster is in the top-right quadrant, its centrality and density values place it near the isolated topics and niches. The need for SD implies the need for leaders who can act to ensure the diffusion of ecological sustainability and integrated knowledge concepts (*Waddock, 2007*). In particular, in the context of HE, leadership is a complex phenomenon, and its complexity increases when responsibilities grow. Training for HE leaders (e.g. heads of departments) is becoming more and more critical for developing sustainability and for its inclusion in HE institutions’ philosophies (*Gonaim, 2016*). Moreover, to navigate a hyper-capitalistic and hypercompetitive world, students require leadership education, as this is fundamental to developing a critical consciousness and to applying sound logic within sustainability practices (*Garcia, 2009; Schedlitzki, 2019*).
Isolated Topics and Niches

In the top-left quadrant, devoted to isolated topics and niches, are many clusters, the most isolated of which is the community of practice. Communities of practice play a critical role in the application of sustainability concepts (Katernyak, Loboda, & Kulya, 2018). Leadership development, sustainable financial models, the professionalization of staff, research, assessments, and community strategies are outcomes of reforms led by communities of practice within HE (Kezar & Gehrke, 2017). These communities can also address shared dilemmas and engage in discussions related to HE practices, improving the quality of teaching and promoting sustainable learning (Mohd. Deni, Zainal, & Malakolunthu, 2013).

Knowledge transfer and autonomy represent another isolated cluster. Social processes are the foundation of knowledge transfer and exchange, especially in the context of HE institutions. In particular, building stable networks, promoting cultural change, and engaging in active network learning are critical to achieving sustainable knowledge transfer (Johnston, Robinson, & Lockett, 2010). Moreover, sustainable knowledge transfer is maintained through intercultural teaching collaboration, improving communication, and enhancing collaboration among scientists (Hoxha, Haugen, Bjørgberg, & Salaj, 2018). Knowledge transfer is achieved in the HE environment through scientific training that occurs through the interaction between senior and junior scientists. Studies reveal that an excessive level of autonomy given by senior to junior scientists could result in a complex situation in which short-term performance is reduced but long-term performance is enhanced (Shibayama, 2019).

The literature on sustainability reporting and indicators focused on the critical parameters for achieving sustainability in the HE field. The inclusion of sustainability education in university curricula is a fundamental element. Moreover, communities of practice and knowledge transfer and sharing are relevant factors for measuring sustainability in HE institutions (Shriberg, 2002). Nevertheless, there is a critical need for appropriate shared guidelines to facilitate the discourse on implementing sustainability policies and measures in HE institutions (Moggi, 2019).

Professional development and studentification represent another isolated cluster. Studentification is the phenomenon in which large numbers of students move into zones traditionally not occupied by them. A socio-spatial restructuring characterizes specific residential areas (He, 2015). There should be regulations to guide this phenomenon, as their absence can cause imbalances among students who live in traditional student and non-student neighborhoods (Smith, 2008). Adequate regulation of studentification can guide re-urbanization, promoting SD in the long run (He, 2015).

Emerging and Declining Themes

Among the emerging and declining themes is tertiary education. Two articles in our dataset debate this theme. The former is related to the increasing quality of the HE system in Hong Kong up to the 1990s (Cheng, 1995). The latter was published in 2021 (Unterhalter & Howell) and performed a literature review on the theme and its underlying issues related to the absence of information about the
phenomenon, despite its origins being traced to the exclusion of low- and middle-income countries in HE. As such, we could not consider tertiary education as an emerging theme and instead classified it as a declining theme.

University–industry collaboration, in contrast, can be considered an emerging theme. The relevance of university–community partnerships is well-recognized as fundamental for enhancing students’ interest in scientific subjects. Nevertheless, building such networks and collaborations is a complex and long process (Sasson, 2019). The development of university–industry partnerships is critical for realizing the potential impact of both sectors (Shams & Thrassou, 2018). In particular, the development of sustainable business models can stimulate open innovation, and it can be fostered by the diffusion of open science (Roman, Liu, & Nyberg, 2018), the building of partnerships to allow industry to collaborate in curriculum planning, and the involvement of students in internships and applied research (Navarro, Barbarasa, & Thakkar, 2019).

**Transversal, General, and Basic Themes**

Last, the bottom-right quadrant includes many clusters and themes, one of the most relevant of which is sustainable development. It is included in the same cluster as HE institutions’ education. Articles related to this theme are focused on the paths and obstacles to the diffusion of sustainability in HE systems. SD is a multidisciplinary field in which the need for a holistic approach is increasingly highlighted in the literature (Cotton et al., 2009). Although the approach to sustainability can be considered highly subjective (Shephard & Furnari, 2013), the role of HE institutions has been identified as critical for the diffusion of sustainability because they are the first places in which new values are discussed and shared (Godemann et al., 2014). Moreover, the HE system can theorize and apply a ‘more culturally inclusive interpretation of sustainable development and sustainability’ (Thaman, 2002, p. 133).

It has been verified that the number of initiatives for the diffusion of sustainability in the HE system is greater than the number of policies and strategies that encourage the integration of SD in HE institutions. Therefore, the literature highlights that the processes connecting SD to universities could be considered ‘bottom-down’ paths (Shawe, Horan, Moles, & O’Regan, 2019). Nevertheless, various studies identified considerable isomorphic pressures on universities (e.g. Chatelain-Ponroy & Morin-Delerm, 2016). Moreover, the literature verified that while sustainable-related concepts are included in university curricula, this is not uniformly true, given the absence of concrete shared guidelines concerning such integration (Sánchez-Carracedo, Ruiz-Morales, Valderrama-Hernández, Muñoz-Rodríguez, & Gomera, 2021).

Furthermore, there are issues related to the coexistence between SD and neoliberal ideologies (Misiaszek, 2020). The coordination between sustainable policies and their application is relatively complicated, and sustainable academic plans are limited (Moore, 2005). Therefore, the possibility of applying sustainable policies to make HE more inclusive is also limited, and in the future, some contradictory and negative consequences may emerge (Heleta & Bagus, 2021).
Another relevant theme is related to SDG. The fourth SDG promoted by the UN is focused on ‘ensuring inclusive and equitable quality education for all’ (Naik, Chitre, Bhalla, & Rajan, 2020, p. 1). Therefore, UN intervention is connected to the concepts of inclusion and equity, primarily referring to developing countries. The fourth SDG is intended to overcome traditional logic in which only a few select people can access high education levels. Moreover, HE is firmly connected with the 16th SDG, which focuses on ‘promoting peaceful and inclusive societies for sustainable development’ (Milton, 2021, p. 89). Teaching, research, governance, and leadership are critical to the expected outcomes of these two SDGs.

Nevertheless, within the literature, there are some critics of applying SD concepts within HE (e.g. Campbell & Mawer, 2019; Heleta & Bagus, 2021). In general, such critics are focused on the obstacles to the application of the fourth SDG that could inhibit the achievement of the sustainable growth of the HE system worldwide. For example, Heleta and Bagus (2021) stated that, despite intending to create an inclusive HE system, the application of the SDGs will likely result in the neglect of HE in low-income countries. Campbell and Mawer (2019) found an absence of fundamental coherence among different study programmes, which could lead to difficulties in realizing a sustainable HE system. Perales Franco and McCowan (2021) identified the formal obstacles to realizing the fundamental role of HE institutions in achieving SD. In particular, they stated that there is little evidence of the institutional forms that can ensure the application of the SDGs.

Conclusion

Our investigation offers useful insights on the interconnections between SD and HE for both practitioners and researchers; in particular, it will be useful for future HE policy planning. Regarding the premise that SD and HE are interconnected, this study confirms both the relationship and the relevance of the issue, showing that academic interest in sustainability issues is increasing in conjunction with the general consciousness of these issues. For example, the number of articles published per year on the topic of SD increased steeply in the mid-1990s, even though the concept was first identified in the 1980s. This increase is in line with the creation of the UNEP and, especially, with the WCED’s first definition of SD, which can be considered the ‘birth’ of sustainability issues at the global level. Moreover, our analysis confirms the significant increase in the relevance of SD in recent years and corroborates our premise that the contributions of HE are highly relevant for fostering SD. Further confirmation is provided by the increase in mentions of the SDGs in the literature – especially the fourth goal related to inclusive education – and their relevance among the transversal, general, and basic themes detected by our analysis. The relevance of this study is confirmed not only through the increase in the number of publications related to SD in recent years but also through the identification of the multidisciplinary approach taken in the interactions between SD and HE.

In the future, there is a need for more research that incorporates a multidisciplinary approach incorporating evidence from the intersection between research and development, HE, and regional growth. Moreover, there is a need to investigate
the role of high schools and universities in the application of a holistic approach which allows curricula to integrate the concepts of sustainability.

Perhaps the greatest contribution of this study is the suggestions that emerge for policymakers that will allow them to draft better HE policies. The study highlights the need to invest in the ability of HE institutions to produce and apply sustainability knowledge, which can be achieved through the modification of teaching plans and programmes and is evident from the fact that work-based learning and education policy feature among motor themes. In particular, there is a need for technical, relational, transformative, and professional competencies, which can be gained through both theoretical and practical learning (Rosenberg et al., 2018).

Moreover, an analysis of the contributions of the motor themes demonstrates that sustainable knowledge transfer can be ensured through intercultural teaching collaboration, improvements to communication, and greater collaboration among scientists (Hoxha et al., 2018). In this sense, appropriate shared guidelines are critical to facilitating discourse on the implementation of sustainability policies and measures in HE institutions (Moggi, 2019). Another important aspect related to educational planning is the need to integrate SD into HE programmes and curricula in the form of interactions between HE and industry, especially through work-based learning policy and practice (Crawford-Lee & Wall, 2018). This aspect is particularly relevant to universities’ ‘Third Mission’ (Venditti, Reale, & Leydesdorff, 2013), that is, the connection between universities and industry, as demonstrated by the presence of university–industry collaboration among the emerging themes. The analysis of transversal, general, and basic themes further reaffirms the need for a holistic approach, given that SD is a multidisciplinary field (Cotton et al., 2009). The role of HE institutions is highlighted as critical for the diffusion of sustainability because these institutions are the first places in which new values are discussed and shared (Godemann et al., 2014).

Our investigation also provides relevant insights for practitioners. A practitioner refers to anyone who is engaged in advocacy initiatives promoting the necessity of SD – that is, those who want to fight for a more sustainable world – although many would not describe themselves thus. Among the motor themes identified in this study are the growing need to train leaders in sustainability – a need that is critical for the advancement of SD – and to include SD as part of the philosophy of HE institutions (Gonaim, 2016). In particular, communities of practice play a critical role in applying sustainability concepts (Katernyak et al., 2018). These factors should guide advocacy practitioners in the creation of solid connections within existing systems, including those of HE institutions.

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