Integrating sustainability in higher education: a Swedish case

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Abstract

Purpose – This paper aims to unveil how sustainability is integrated into the courses/programmes of higher education institutions. The research question addressed is: how do academics representing different disciplines cooperate and engage in the work of integrating sustainability into their teaching programmes.

Design/methodology/approach – This paper draws upon the notions of practise variation and institutional work from institutional theory and empirically focusses on the case of Kristianstad University (Sweden). This case is based on an autoethnographic approach and illustrates the experiences shared by six colleagues, representing different disciplines, engaged in implementing sustainability in their courses/programmes.

Findings – The findings highlight how academics representing different disciplines, with specific traditions and characteristics, face the sustainability challenge. Despite being bound by similar sustainable development goals, differences across disciplines need to be acknowledged and used as an asset if trans-disciplinarity is the ultimate goal.

Research limitations/implications – Although the intrinsic motivation of individuals to work with sustainability might be a strong driver, the implementation of sustainability within courses/programmes and across disciplines requires joint efforts and collective institutional work.

Practical implications – By highlighting how academics engage in the work of integrating sustainability, this study emphasizes that managers of higher education institutions need to account for the time and additional resources needed to ensure that academics effectively cope with sustainability. Intrinsic motivation may not last if organizational structures and leadership are not supportive on a practical level and in the long run.

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Social implications – With the successful implementation of a holistic approach to sustainability, students will have better insights and understanding of both themselves and the surrounding society, laying the ground for an inclusive future society.

Originality/value – This paper emphasizes the gradual approach to be followed when sustainability becomes part of an organization-wide discourse. Dialogues within and across disciplines are needed to overcome silo thinking and stimulate cooperation within a trans-disciplinary approach.

Keywords Higher education, Sustainability, Sustainable development goals, Institutional work, Inter-disciplinarity, Trans-disciplinarity

Paper type Research paper

1. Introduction

The alarming context of modern society challenges the role of higher education institutions and questions their capacity to increase students' awareness of the local, regional and global contexts in which they live (Levi and Rothstein, 2018). According to Mulà *et al.* (2017), current education systems, instead of teaching the crucial skills to make sound and ethical decisions, reinforce unsustainable thinking and practises. Those authors claim that efforts to transform society have to focus on educators – building their understanding of sustainability and their ability to transform curriculum and wider learning opportunities. This shows the crucial role that academics play in implementing sustainability in teaching programmes and the need to pursue their professional development in the field of sustainability (Warr Pedersen, 2017).

Research has investigated how higher education institutions in various countries are dealing with the sustainability challenge and potentially changing the teaching programmes they offer in various disciplines (Avery and Nordén, 2017; Ferrer-Balas *et al.*, 2008; Lambrechts *et al.*, 2017; Meyer *et al.*, 2017). Considerable efforts need to be addressed towards both the educators and the students (Mulà *et al.*, 2017). On the one hand, educators need to have technical knowledge about inter- and trans-disciplinarity (Di Giulio and Defila, 2017; Meyer *et al.*, 2017). On the other hand, students need to become more aware of their role in and responsibility to the world (Levi and Rothstein, 2018). The need to cross disciplines and benefit from interrelationships, rather than sticking to silo thinking, is in line with the fundamental idea of the 17 sustainable development goals (SDGs) of the United Nations (UN) Agenda 2030. Those SDGs should be regarded as a mutually interdependent whole. However, silo-structured and compartmentalized views (Barber *et al.*, 2014; Dmochowski *et al.*, 2016; McMillin and Dyball, 2009) can prevent educators from seeing how their own academic disciplines related to sustainable development, which can compromise the scene of the SDGs as a whole.

With this in mind, establishing an academic inter-disciplinary culture becomes especially important. Experts from several disciplines should together establish inter- and trans-disciplinary perspectives on teaching/learning from which sustainable development, as the main theme, should be approached (Avery and Nordén, 2017; Meyer *et al.*, 2017). Through such interlinked initiatives, students may gain a more complete understanding of sustainability and of the far-reaching impacts of a wide range of human activity. Yet, achieving such results is not easy and requires various efforts (Barber *et al.*, 2014). Therefore, the purpose of this paper is to unveil how sustainability is integrated into the courses/programmes of higher education institutions. The specific research question addressed is: how do academics representing different disciplines cooperate and engage in the work of integrating sustainability into their teaching programmes? This question is explored by presenting the case of Kristianstad University (in Swedish: Högskolan Kristianstad).

Kristianstad University is a small university college located in the south of Sweden and consists of four faculties – business, health science, teacher education and natural science (Högskolan Kristianstad, 2019). In 2019, Kristianstad University had 500 employees (69% academics, 31% administrative staff) and more than 14,800 students (Högskolan Kristianstad, 2020). This case of Kristianstad University is relevant because the central strategy welcomes sustainable thinking within the university and the introduction of sustainability in teaching programmes (Högskolan Kristianstad, 2019). Beyond the central strategy, academics representing various disciplines have started to be innovative with the teaching programmes they are involved in and intra- and inter-disciplinary dialogues have started to flourish (Kristianstad University, 2020). The case is also representative of the actual situation in Sweden in that Swedish higher education institutions are legally required to include sustainability in their programmes (Sammalisto and Lindhqvist, 2008) and because in Sweden itself there is a general propensity towards sustainability (Agenda 2030-delegationen, 2019).

The remainder of this paper is structured as follows. Section 2 depicts the theoretical framework underpinning this study and is followed by a description of the empirical method in Section 3. Afterwards, the case study is presented in Section 4 and followed by a discussion of the findings in Section 5. The paper ends with conclusions and reflections on future research in Section 6.

2. Theoretical framework: changes in higher education institutions

The concept of sustainability has become one of the most pressing mandates in recent years (Carrol, 2015). A first definition of the concept of sustainability was provided by the World Commission on Environment and Development (1987) and expressed as follows: *development that meets the needs of the present without compromising the ability of the future generations to meet their own needs* (World Commission on Environment and Development, 1987, p. 43).

Upholding sustainable behaviour entails an orientation towards the future; that is, today's decisions should not negatively affect future society. Moreover, the above-mentioned commission widened the former environment-based perspectives on sustainable development to include societal and economic aspects. Thus, sustainability is a multifaceted concept that includes everything from the need to preserve ecosystems to the need to empower people within organizations to initiate sustainable practises in both the private and public sectors. For instance, the public sector has witnessed the proliferation of smart city projects aiming to achieve various and interrelated SDGs (Brorström *et al.*, 2018).

Various pressures and expectations exerted by different types of stakeholders influence organizational practises (DiMaggio and Powell, 1983). This argument from institutional theory also applies to higher education institutions trying to integrate sustainability in their teaching programmes. Such institutions witness considerable organizational changes when launching sustainability-related initiatives (Lambrechts *et al.*, 2017). Public universities have to be responsive to the government as they receive and use public funding (Kallio *et al.*, 2017). However, private universities are not exempted from the expectations of modern society. Some authors speak of universities as hybrid organizations that are exposed to different institutional logics (Thornton *et al.*, 2012). On the one hand, universities follow the *market logic*, which means that they need to be responsive to external pressures and expectations stemming from increased competition, accreditation, funding, etc. On the other hand, universities follow *state logic*, which means that they need to be accountable to society and create public value for current and future students and other stakeholders. In addition, the *academic logic* focussing on academic freedom and intrinsic motivation needs to be considered as well (Dobija *et al.*, 2019). Coping with the different logics implies increased interactions between academia and the surrounding society, which, in turn, affect and are affected by the sustainability discourse.

An increasing number of higher education institutions are approaching sustainability in their teaching programmes as a result of isomorphic forces (DiMaggio and Powell, 1983). Governmental requirements to be more sensitive towards sustainability represent *coercive pressures* that force higher education institutions to adapt to that external pressure. In the Swedish context, for example, the Higher Education Act, Section 5, clearly states that *higher education institutions shall promote sustainable development to assure for present and future generations a sound and healthy environment, economic and social welfare and justice* (Swedish Council for Higher Education, 2019). In addition, because of the changes in the external context, some higher education institutions might imitate those that are recognized as best practises, which is a form of *mimetic isomorphism*. Some higher education institutions may feel pressure from others that join various initiatives, such as the principles for responsible management education (PRME) and follow the general trend. Finally, *normative isomorphic pressures* can stem from the values and norms that some academics who are more sensitive towards sustainability may try to institutionalize within their institutions by acting as champions and establishing a continuous dialogue with their colleagues and programme directors.

Despite such isomorphic pressures, the reactions of higher education institutions may not lead to full homogeneity and leave room for *practise variation* (Lounsbury, 2008). This means that academics might work not only with each other but also preserve their own competence and knowledge when integrating sustainability into their courses and programmes. Practise variation may also be necessary because following the opposite and sometimes conflicting logics mentioned above may be difficult (Greenwood *et al.*, 2011; Argento *et al.*, 2016), especially in the context of higher education institutions where barriers to organizational change exist (Avery and Nordén, 2017; Lambrechts *et al.*, 2017).

One of the main barriers emerges when higher education institutions do not establish incentive systems that promote changes at the individual level (Ferrer–Balas *et al.*, 2008). Rather often, implementing sustainability becomes an additional task and academics may not have enough intrinsic motivation to engage in activities (Dmochowski *et al.*, 2016), which require collaboration with colleagues and other internal and external stakeholders (McMillin and Dyball, 2009). The lack of time, funds and administrative support make it difficult to integrate sustainability in higher education institutions (Barber *et al.*, 2014). In addition, higher education institutions' strategy, purpose and expectations concerning the integration of sustainability need to be supported by management and organizational structures (Rusinko, 2010).

Yet, for the purpose of integrating sustainability into teaching programmes and sensitizing students, academics can no longer work in more or less isolated silos (Barber *et al.*, 2014; Dmochowski *et al.*, 2016). They need to integrate sustainability issues by collaborating with and learning from colleagues who specialize in other disciplines (McMillin and Dyball, 2009). That is, academics need to engage in *institutional work*, defined as *the practises of individual and collective actors aiming at creating, maintaining and disrupting institutions* (Lawrence *et al.*, 2011, p. 52). Focussing on institutional work enriches the understanding of the characteristics, roles and actions of key actors (Hwang and Colyvas, 2011) involved in the changes taking place in higher education institutions. Actors often react *locally, creatively, incrementally and more or less reflexively* (Lawrence *et al.*, 2011, p. 57). Such variety implies that institutional work can take different forms (Empson *et al.*, 2013). In sum, institutional work leads to considering "how" change, in terms of integrating sustainability in higher education institutions, is (eventually) achieved.

3. Method and empirical context

To fulfil the purpose of this paper, the empirical study focusses on the case of Kristianstad University because of its commitment to the sustainability cause. In 2016, Kristianstad University signed up as a member of the UN Global Compact (GC) and expressed its intention to contribute to the achievement of the SDGs. Kristianstad University is also active in the voluntary UN-based initiative PRME and has joined the Sustainable Development Solutions Network (SDSN) (Kristianstad University, 2018, 2020).

Because of this commitment, Kristianstad University has been active in introducing sustainability in its teaching programmes (Högskolan Kristianstad, 2019). To support and educate teachers, a pedagogic course labelled "teaching for sustainable development" (corresponding to 4.5 credits) was launched in fall 2018 (Kristianstad University, 2020). Teachers attending that course "open up" to sustainability and exchange ideas on how to integrate the SDGs into single courses' syllabi, activities and programmes. Besides this centralized initiative, there are more localized initiatives at each faculty. For instance, the faculty of science has implemented a study mapping sustainability and the SDGs, while the faculty of business has been engaged in implementing the PRME six guiding principles, which encourage business programmes to recognize their role as drivers of sustainable change and to adapt their curriculum, pedagogy and institutional strategies (www.unprme.org; Warvick *et al.*, 2017).

The authors of this paper represent six disciplines, namely, business administration, computer science, education science, environmental science, food and meal science and nursing science. They started a collaboration to compare their experiences of introducing and/or integrating sustainability aspects in their teaching programmes, thus using an autoethnographic approach as the research method (Adams *et al.*, 2015). The authors have shared their personal experiences to describe and critically reflect on how teaching is performed in their respective programmes. In this process, the authors have constantly recognized and valued their relationship with the aims of Agenda 2030 and related SDGs. This means that moments of self-reflection (i.e. reflexivity) have been interwoven with joint discussions on how to proceed to integrate sustainability into teaching with the aim of fulfiling the aims of Agenda 2030 and, in turn, contribute to a sustainable society at large.

The working process consisted of a number of meetings starting in spring 2018. Preliminary meetings were arranged in spring 2018 to identify the working team and the aim of the collaboration. At this initial stage, the six authors met and wrote a joint application for external funding to establish an interdisciplinary research environment. Although this application was rejected, the six authors continued to arrange meetings to work more systematically with the topic at stake.

The systematic meetings took place from December 2018 and are still ongoing. The aim of those meetings was to create a common understanding of the initiatives taken in the respective programmes and pave the ground for writing a case study including the accounts of how sustainability is implemented in each discipline represented by the authors of this paper. The meetings were held on a monthly basis and lasted between 1 and 2 h each. Those meetings took the form of conversations related to specific topics, including the authors' individual experiences of introducing sustainability in courses/programmes, their cooperation with colleagues in their departments, their perception of challenges and opportunities related to changing content and approaches in their courses/programmes and identification of the three most relevant SDGs that are already (and/or could be) covered in their courses/programmes. The meetings were held on campus except in the summer and during the Covid-19 pandemic, when they were held via Skype, Microsoft teams and on the phone. For each meeting, one of the authors made written notes to keep track of the progress of the collaboration and the six authors agreed on the tasks to be performed before the next meeting.

As the meetings progressed and knowledge was shared and systematized, the authors developed a deeper understanding and awareness of how sustainability is being integrated into their respective courses/programmes. By inspecting course syllabi and holding conversations with colleagues actively involved in sustainability issues, the authors also realized that sustainability is reflected in research activities conducted in their groups/departments. Each author executed this analysis and subsequently presented/discussed it during the next meeting. By comparing their results, the six authors of this paper identified similarities and differences across their disciplines, recognized the common challenges of integrating sustainability within a discipline and paved the way for future inter- and trans-disciplinary approaches to sustainability in higher education, which is the ultimate goal of their ongoing collaboration.

To corroborate the reliability of the findings, some documents were analyzed as well. The analysis, conducted on a manifest rather than latent/abstract level, was concentrated on the latest available annual reports of Kristianstad University (Högskolan Kristianstad, 2019, 2020), the 2018 and 2020 PRME reports (Kristianstad University, 2018, 2020), internal reports about mapping sustainability in the faculty of science and material available on the Web page.

Following those meetings, each author prepared a personal account describing their experience with introducing sustainability in their respective programmes (see next section). Those six accounts reflect the events, traditions and group dynamics within each discipline/programme and show how sustainability is being implemented in the selected case study of Kristianstad University. By discussing and analyzing the six accounts through the theoretical framework presented before, the authors have highlighted similarities and differences in how academics work with sustainability. Finally, the authors have started to write a new joint application to obtain the external funding needed to implement sustainability in a holistic way.

4. Integrating sustainability: personal accounts

This section presents the six accounts on how sustainability is being implemented in the courses/programmes representing each of the disciplines covered in this study. Given that Kristianstad University's central sustainability strategy gives each faculty the freedom to integrate sustainability in the most suitable way, presenting the six experiences separately provides detailed knowledge about how academics engage with sustainability.

4.1 Business administration

Embracing the idea that today's business and management graduates need a form of education that helps them to positively contribute to sustainable development (Warvick *et al.*, 2017), the implementation of sustainability within the business programme has taken place through a sensitization process started during various workplace meetings. Since 2016, the business programme is engaged in the PRME, the global initiative aimed at realizing the sustainability mandate within business education (Warvick *et al.*, 2017).

This engagement represents both a challenge and an opportunity for academics (Weybrecht, 2017), who need to incorporate sustainability into their teaching and research and encourage the business mindset shift towards more sustainable and ethical practises (Warvick *et al.*, 2017). Given such commitment, academics were invited to engage more actively with sustainability and try to integrate it in their courses (Högskolan Kristianstad, 2019).

In the period 2018-2019, Kristianstad University has joined the network PRME Champions (Högskolan Kristianstad, 2019). One teacher in the business programme, appointed as a sustainability champion (from now on, the Champion), received the mandate

to facilitate the development and integration of the SDGs within the business programme. No specific guidelines were proposed and, therefore, each teacher was free to proceed at their own pace and in line with their own goals.

The Champion mapped how sustainability aspects are included in various courses of the three directions of the business programme (i.e. International Business and Marketing, Bank and Finance, and Accounting and Auditing) and the research projects and outputs dealing with sustainability. The results showed that academics engage with sustainability by integrating, to a greater or lesser extent, some topics into their courses and by conducting research projects dealing with, for example, sustainability reporting, smart and sustainable city strategies, well-being and gender issues. The most relevant goals are SDG 8 decent work and economic growth, SDG 12 responsible consumption and production and SDG 17 partnerships for the goals.

In addition, the Champion has promoted the creation of a business ethics track running throughout the fall semester of the one-year master programme (both the international business and marketing and the auditing and control tracks). Students conduct a project in cooperation with a partner organization (e.g. banks and accounting firms) and investigate how sustainability is implemented in the selected partner organization. Students also write a scientific report and present their findings in seminars.

The Champion also organized the "Sustainability Week". In spring 2019, students of different disciplines prepared posters and participated in focus groups about sustainability (Alm, 2019). These posters were displayed in the university library for one week and everyone (teachers and other students) could contribute by writing their reflections and suggestions.

4.2 Computer science

A valuable achievement for the computer science discipline is that Kristianstad University has joined the SDSN (Kristianstad University, 2018). The SDSN is a worldwide network to support progress in approaching the UN's 17 SDGs (SDSN, 2019) and consists of several sub-networks that operate at local levels such as the SDSN NE where NE stands for Northern Europe (SDSN NE, 2019).

At the launch of SDSN NE, in February 2016, Swedish business and political leaders were invited to participate, along with engaged academics and representatives of several organizations, such as the UN and the Swedish International Development Cooperation Agency. At that launch, the significance of information technology (IT) for approaching the SDGs was clearly pointed out several times. In particular, "cutting-edge techniques" were pointed out, such as big data, data mining, cloud computing, artificial intelligence and the internet of things. Computer science or IT, does not explicitly correspond to any of the SDGs but is nevertheless considered to be crucial for the fulfilment of each of them (UN, 2016). IT can contribute to interdisciplinary contexts to approach Agenda 2030. For instance, e-Health is a trans-disciplinary area, where IT contributes to SDG 3 good health and well-being. Moreover, several reports (such as ITU, 2019 and WEF, 2019) point out IT-based contributions to SDG 11 sustainable cities and communities.

Furthermore, IT has an obvious impact on the SDG 9 industry, innovation and infrastructure, which, in turn, may provide values to several of the SDGs. Examples of projects at Kristianstad University include the provision of IT infrastructures to support food delivery for elderly people (SDG 2 zero hunger) and the analysis of data regarding drinking water quality (SDG 6 clean water and sanitation).

From a perspective of computer science education at Kristianstad University, the potential in introducing teaching programmes that focus on IT-based solutions for the SDGs may serve several purposes. Apart from motivating courses covering advanced techniques,

we can here also see one of academia's great chances to contribute to sustainable development that is through educating students in such matters.

In fall 2018, a new international master programme in computer science emphasizing sustainable development was introduced at Kristianstad University. That programme covers techniques such as those mentioned above and introduces students to concepts of sustainable development. Students meet experts representing different disciplines and enterprises to see their role in multi-disciplinary contexts. Furthermore, students are engaged in projects that clearly apply to such contexts and they get practise in the project organization. Students conclude their studies through a master thesis project, which should have a significant impact in the context of Agenda 2030.

4.3 Education science

Sustainability education is now widely included in school curricula around the world (UNESCO, 2014). Curricula in Sweden clearly stress the importance of education on ecosystems and biodiversity, as well as aspects of health (Swedish National Agency for Education, 2011).

Based on these developments, the research group "teaching and learning in science and mathematics" at Kristianstad University has launched a project related to teaching students in the subject of sports and health. The purpose was to investigate their way of reasoning about health and environmental issues and to introduce them to didactic research in public health science and environmental science through seminars and to visualize trans-disciplinarity. Researchers in natural science education and in public health science conducted a number of seminars. Those seminars were about the teacher students' perceptions and development of environmental concepts and factors for good health and they were also about integrating health perspectives and environmental issues. The focus was partly to discuss the following questions:

Q1. What are the dominant health risks for Swedes today and in the future?

Q2. What are the dominant health risks globally today and in the future?

Q3. What aspects do health and environment, in general, have in common?

Q4. When you think about your future teaching role, which areas in/aspects of health and environment will you develop in your teaching?

Q5. Has your view concerning the connection between the areas of health and the environment changed during teacher education?

The teacher students were challenged about the influence of carbon dioxide according to their own lifestyle choices. They also role-played interactions between various actors, including business leaders, politicians, celebrities and themselves. The aim of the task was then to participate in a round-table conversation, reasoning about a sustainable future on earth. The teacher students expressed their lack of knowledge regarding sustainability. They subsequently connected people's use of forest and land with a deterioration of human life conditions and health. Most of the students broadened the environmental perspective, from an egocentric to a biocentric approach. The students expressed a desire to develop a personal commitment to health and the environment in the future.

By concentrating on teacher students' issues about lifestyle choices (e.g. buying endless sets of training clothes and equipment) and the way these affect people's working conditions, health and well-being all over the world, the most relevant goals are SDG 12 responsible consumption and production and SDG 3 good health and well-being. SDG 4 quality education is also important, as it pertains to the teacher students' future profession.

4.4 Environmental science

The environmental science programme, called the environmental strategist programme, is aware of the growing urbanization phenomenon. The global urban population is rising and it is estimated that in 2050 about 70% (6.9 billions) of the world's population will live in cities (Sodic *et al.*, 2019). To make these cities sustainable, attention has to be focussed on several factors such as climate change, use of resources, energy conservation and energy efficiency, transportation, water security, social equity, high consumption and management of the waste produced. Therefore, the teachers in the environmental science programme have started to address the SDGs in Agenda 2030 by referring to all countries, not just developing ones. SDG 11 sustainable cities and communities are essential and are highlighted in environmental science education in considering the present and forthcoming multi-faceted development in urban areas.

Despite encouraging progress in waste management there is much still to be done across the world in making the transition from "end-of-pipe" waste management in a linear economy to integrated and sustainable resource and waste management in a circular economy. By 2050, a massive increase in the amount of waste produced globally is projected (Kaza *et al.*, 2018). Thus, the environmental science programme tries to address the impelling need to ensure a substantial reduction in a waste generation through prevention and the reduce, reuse and recycle, thereby creating green jobs and, more specifically, cutting in half per capita global food waste at the retail and consumer levels and reducing food losses in the supply chain. SDG 6 clean water and sanitation is another SDG of great importance in environmental education. It reflects the increased attention on water and sanitation issues in the global political agenda. The 2030 Agenda lists rising inequalities, natural resource depletion, environmental degradation and climate change amongst the greatest challenges of our time. It recognizes that social development and economic prosperity depend on the sustainable management of freshwater resources and ecosystems and it highlights the integrated nature of SDGs. In this respect, SDG 13 climate action is also important in the environmental science programme.

The aim for the students in environmental science education at Kristianstad University is to develop skills to plan, implement and report on environmental science studies. The students delve empirically, theoretically and methodologically into an optional environmental science problem area, which will lead to an inter-disciplinary approach in line with Agenda 2030. Particular emphasis must be placed on being able to delimit, explore and analyze an environmental problem in a holistic perspective, where the focus is on the complex relations between humans, society and humans' ecological environment. The overall aim is to develop in-depth knowledge of current environmental science research, theory and methods. In the environmental science programme at Kristianstad University, Agenda 2030 for sustainable development is central and is implemented in courses in the form of discussions, workshops and projects.

4.5 Food and meal science

The food and meal science programme seriously consider the alarming figures related to food habits. Each person eats an average of 50 tons of food over a lifetime, which costs approximately SEK 1.4m. In addition, we drink about 90,000 cups of coffee! What we eat and drink has a great impact on both health and the environment. People today are living longer than earlier generations and are taller and increasingly overweight and obese. Unhealthy eating habits are the leading cause of poor health and food habits have a large impact on both health and sustainability (Wood *et al.*, 2019; GBD 2017 Diet Collaborators, 2019). Today's consumption shows that the Nordic populations need to increase their intake of

vegetables and legumes, exchange refined grains for whole grains, substantially reduce consumption of red meat and limit sugar intake to meet recommendations for health and sustainability (Wood *et al.*, 2019; Norden, 2014).

It is estimated that by 2050 the human population will be 9.7 billion and food requirements will be 70% higher than today (FAO, 2017), a level that will not be possible to attain, as agricultural resources and water resources are limited. Nor is it sustainable in the light of global warming and other sustainability goals. For example, 12% of green house gas emissions are associated with livestock production, highlighting the need to substitute a large proportion of animal-based with vegetable-based food to provide a more sustainable food supply. Worldwide, food production has a huge impact on the environment (Tilman and Clark, 2014). According to the expertise, authoritativeness, trustworthiness (EAT)-Lancet Commission, there is an urgent need for a change when it comes to food; the report concludes that food will be a defining issue of the 21st century (Willet *et al.*, 2019).

In 2018, the food and meal science group at Kristianstad University worked thematically with gastronomy and sustainability. Invited lecturers included Elin Röös (SLU), who spoke about the carbon footprint of different foods (Röös, 2013) and Camilla Sjörs, who discussed sustainable eating habits (Sjörs, 2017). One of the main activities in the thematic work entailed reading and presenting papers and/or books within the theme.

A diversity of books and papers were presented during a workshop held in June. The discussion that followed aimed to plan how to implement sustainability in education within the food and meal science. The workshop invented a concept: circular gastronomy. It was decided to work further on this and implement it in the courses.

Food may be connected to all 17 SDGs according to the EAT-Lancet report (Willet *et al.*, 2019), which is in line with the courses within the food and meal science programme at Kristianstad University. However, the food and meal science group places more emphasis on three of the goals, namely, SDG 3 good health and well-being, SDG 13 climate action and SDG 2 zero hunger.

4.6 Nursing science

Nurses' holistic perspective is fundamental for sustainability with respect to health and well-being. They contribute to sustainable development for current and future generations by working to ensure the health and well-being of all people. Nurses have, throughout history, taken initiatives towards sustainability in their striving for improved human health within the physical, economic and social environments (Schneider *et al.*, 2009). Even the work of Florence Nightingale (1820-1910), the philosophical founder of modern nursing, anticipated somehow the 17 SDGs as factors in recovering and maintaining health (Nightingale, 1860) and so do later initiatives (ICN, 2017).

The concept of sustainability in nursing can be defined as:

> [...] a core of knowledge in which ecology, global and holistic comprise the foundation. [...] sustainability includes environmental considerations at all levels. The implementation of sustainability will contribute to a development that maintains an environment that does not harm current and future generations' opportunities for good health (Anåker and Elf, 2014, p. 387).

Kristianstad has had a nursing programme since 1893. In fall 2019, a new nursing programme was established at Kristianstad University. In agreement with Anåker and Elf (2014), sustainability is included in the academic nursing programme and subject description. The programme has modules focussing on supervision, ethics, leadership and profession (in Swedish: Handledning, Etik, Ledarskap, Profession – HELP) targeting sustainable labour from a nursing perspective (Kristianstad University, 2020). As both

salutogenesis and person-centred care are important from a sustainability perspective, both these concepts are part of the new programme's curriculum. In the programme, salutogenesis, pathogenesis, person-centred care and sustainability are emphasized. Salutogenesis focusses on factors that support human health and well-being rather than factors that cause disease (pathogenesis) (Antonovsky, 1987). From a salutogenetic perspective, one strengthens resources that facilitate health and health is a subjective experience connected to the person's sense of coherence. The person-centred care framework comprises prerequisites (attributes of the nurse); the care environment (the context in which care is delivered); person-centred processes (delivering care through a range of activities); and expected outcomes (results of effective person-centred nursing) (McCormack and McCance, 2006).

Besides the mentioned concepts, ecology, economy, social sustainability and student-centred learning are successively integrated in the new nursing programme. There is a need for increased and in-depth knowledge of sustainability throughout the teachers' team to make the implementation sustainable in itself. Even though nursing should anticipate all 17 SDGs, as recently highlighted by the International Council of Nurses (ICN, 2017), the nursing education at Kristianstad University focusses the most on SDG 2 zero hunger, SDG 3 good health and well-being and SDG 4 quality education.

The following table visualizes the SDGs that are already (and/or could soon be) covered in the courses/programmes representing the six disciplines covered in this study (Table 1).

Discipline / SDGs	Business administration	Computer science	Education science	Environmental science	Food and meal science	Nursing science
No poverty						
Zero hunger					X	X
Good health and well-being		X	X		X	X
Quality education			X			X
Gender equality						
Clean water and sanitation				X		
Affordable and clean energy						
Decent work and economic growth	X					
Industry, innovation and infrastructure		X				
Reduces inequalities						
Sustainable cities and communities		X		X		
Responsible consumption and production	X		X			
Climate action				X	X	
Life below water						
Life on land						
Peace, justice and strong institutions						
Partnerships for the goals	X					

Table 1. Contribution to the SDGs

A closer analysis of the table and consideration of the information presented earlier reveals some overlaps amongst the SDGs pursued in the courses/programmes representing the six disciplines included in the selected case. SDG 3 good health and well-being, SDG 4 quality education, SDG 11 sustainable cities and communities, SDG 12 responsible consumption and production and SDG 13 climate action were identified more than once.

By identifying and discussing the three most relevant SDGs for each discipline, the six authors have become aware of the common issues and connections between their disciplines and of the opportunities for trans-disciplinary education and research. Opportunities for inter-disciplinary cooperation between food and meal science and nursing science are connected to SDG 2 zero hunger. At the same time, a contribution to SDG 3 good health and well-being could be made by bridging four disciplines, namely, computer, education, food and meal and nursing sciences. Nurses need to learn how to teach and motivate people to promote health and prevent illness. Therefore, nursing science can cooperate with education science to improve nursing students' pedagogic skills (SDG 4 quality education). Good health and well-being (SDG 3) and quality education (SDG 4) are linked to SDG 8 decent work and economic growth and SDG 12 responsible consumption and production, which, in turn, need the support of business administration and education science in terms of the values and principles to be taught to future managers.

Computer science and environmental science can cooperate regarding education connected to ensuring a closer achievement of SDG 11 sustainable cities and communities. Furthermore, environmental science and food and meal science can mutually benefit regarding SDG 13 climate action. Although only the three key goals for each discipline are identified in Table 1, further interconnections have already been mapped. For example, business administration can contribute by teaching how to manage smart cities and pursue economic, environmental and social sustainability performance. Furthermore, it is a responsibility within the business administration discipline to educate future managers with values aimed at minimizing negative impacts on the climate. Similar reflections have been made across the six disciplines covered in this study.

Possibilities for cross-fertilization and cooperation go beyond teaching. In terms of research, there are already examples of cooperation that mirror the results visible in Table 1. For instance, there is ongoing cooperation between nursing science and food and meal science in a project focussing on promoting independent eating by offering "finger foods" to persons with motoric eating difficulties and, in turn, preventing the development of undernutrition.

Despite the identified commonalities, important similarities and differences in the approaches used to integrate sustainability have emerged and are discussed in the next section.

5. Comparative analysis and discussion of the findings

The findings presented in the previous section describe how sustainability is being integrated into the courses/programmes and related research activities, of six different disciplines at Kristianstad University (Sweden). In line with the arguments of the theoretical framework (Thornton *et al.*, 2012; Dobija *et al.*, 2019; Greenwood *et al.*, 2011; Argento *et al.*, 2016), academics working at Kristianstad University are exposed to various *institutional logics* (i.e. market, state, academic), which makes it hard, if not impossible, to escape from sustainability issues. Increased competition and the need to access external research funding make academics more sensitive towards the sustainability-related expectations expressed by students, industry, the state and other stakeholders (i.e. the market and state logics). Academics who, for various reasons, are driven towards sustainability may devote their time and energies to sustainability-related research projects, networking and teaching activities (i.e. academic logic).

Concerning *isomorphic forces* (DiMaggio and Powell, 1983), the case of Kristianstad University shows that *coercive pressures* (e.g. the Swedish Higher Education Act and Strategy Documents of the University) and *mimetic pressures* (generated by other higher education institutions engaged with sustainability) may play a role. Kristianstad University, like other Swedish higher education institutions (Sammalisto and Lindhqvist, 2008), is subject to the regulation concerning the need to support sustainable development. Kristianstad University has embraced the UN GC, PRME and SDSN networks. However, the experiences shared by the authors of this paper seem to indicate that *normative pressures* stemming from the values and norms of "sensitive" academics, who engage in various forms of *institutional work* (Lawrence *et al.*, 2011; Empson *et al.*, 2013), can strongly motivate the implementation of sustainability within and across courses/programmes.

In line with the idea that it is not feasible to have homogeneous reactions from all faculties and given the absence of prescriptive implementation methods, the findings also reveal that *practise variation* (Lounsbury, 2008; Greenwood *et al.*, 2011) amongst academics and the learning activities offered in various courses/programmes/disciplines is a reality. The most evident difference between the six disciplines is related to the *institutional work* (Empson *et al.*, 2013; Hwang and Colyvas, 2011; Lawrence *et al.*, 2011) implemented by key academics to integrate sustainability. The six accounts show that sustainability is being introduced in different ways in line with the traditions, history and specific events within each discipline. That is, on the operative level, practise variation (Lounsbury, 2008; Greenwood *et al.*, 2011) can be identified by observing the decisions made and actions taken within each discipline. Specifically, in some disciplines, sustainability has become an important topic through the organization of dedicated seminars and workshops (see food and meal science, and education science). In others, entire programmes have been revised by taking sustainability issues into account (see environmental science and nursing science). The business programme has nominated "the Champion", implemented sustainability in various courses and established a devoted track in the master year, whereas computer science has created an entire master programme.

These initiatives are the result of the institutional work (Empson *et al.*, 2013; Hwang and Colyvas, 2011; Lawrence *et al.*, 2011) conducted by academics who individually and/or collectively have played (and still play) a decisive role in the local implementation (i.e. within the single discipline/programme) of sustainability. Those initiatives surely have a connection to the SDGs, as wished for by the central directions of Kristianstad University (Kristianstad University, 2018). As highlighted in Table 1, the six disciplines covered in this case study offer courses/programmes that more or less directly deal with the 17 SDGs. Despite practise variation (Lounsbury, 2008; Greenwood *et al.*, 2011), some commonalities were identified. Overall, good health and well-being (SDG 3), quality education (SDG 4), sustainable cities and communities (SDG 11), responsible consumption and production (SDG 12) and climate action (SDG 13) are the goals that unite the six disciplines at Kristianstad University.

Another similarity that emerged from the findings is that implementing sustainability is not easy, thereby corroborating the results of previous studies in the field (see also Dmochowski *et al.*, 2016; Lambrechts *et al.*, 2017). From the experiences shared by the authors of this paper, in the work with integrating sustainability in the various courses/programmes, many efforts are necessary. The inclusion of sustainability within existing or new courses/programmes faces various challenges and barriers (Avery and Nordén, 2017; Barber *et al.*, 2014; Ferrer–Balas *et al.*, 2008) that hinder institutional work (Empson *et al.*, 2013; Hwang and Colyvas, 2011; Lawrence *et al.*, 2011) aimed at innovating courses/programmes.

The need to focus on individual educators' competence (Mulà *et al.*, 2017) is evident also in Kristianstad University. There needs to be skilled in the teachers' team and supporting sustainability requires having more than just one or a few people actively engaging in institutional work (Empson *et al.*, 2013; Hwang and Colyvas, 2011; Lawrence *et al.*, 2011). Each teacher needs in-depth knowledge of sustainability issues related to their own specific subject and how those issues are connected to and interfere with other subjects and disciplines. Offering the pedagogic course "teaching for sustainable development" is surely a step forward, but it may not be sufficient to effectively include the SDGs in the expected learning outcomes of courses/programmes and achieve the trans-disciplinary approach that would make a useful contribution to the SDGs.

Substantial knowledge is needed because flagging sustainability is not about outward appearance but about inward significance. One common difficulty is that academics are challenged by the wish to follow a holistic approach when including sustainability in their courses/programmes. However, deep knowledge of how sustainability is connected to their own discipline should be the starting point to avoid the risk of superficiality. This challenge emerged during the study as a commonality of the six disciplines. In addition, as the study progressed, the differences in discipline-related traditions and characteristics became evident. Sustainability aspects are different in the computer science discipline compared to, for example, nursing science. With the awareness of such differences, the implementation of sustainability is a long-term process and investment. Such a process should also be sustainable in that academics must have the time they need to read/study/learn more about their own discipline and to embrace a more inter- and trans-disciplinary approach to sustainability.

The comparison of the work executed within each discipline leads to further reflections. The acknowledged need for educators to improve their technical knowledge about inter- and trans-disciplinarity (Di Giulio and Defila, 2017; Meyer *et al.*, 2017) requires efforts that go beyond inviting a guest lecturer to give the appearance of treating sustainability from different perspectives without really benefitting students apart from increasing their awareness. As learned from the study, progression amongst the various semesters is also something that needs to be considered when planning new courses/programmes or revising existing ones. Progression requires the ability to understand and connect the contents of various colleagues' lectures/courses/activities and to make such connections visible not only to the students but also to the surrounding society that has become more aware of sustainability. The need for collaboration within and across disciplines and with internal and external stakeholders and possibly for engaging students (McMillin and Dyball, 2009), has constantly emerged in this study. This finding is relevant as it shows how institutional work (Empson *et al.*, 2013; Hwang and Colyvas, 2011; Lawrence *et al.*, 2011) requires collective efforts to be effective especially when general pressures at higher education institutions level are compelling.

Besides the need for time and resources to develop sustainability-related skills (Barber *et al.*, 2014), another barrier to implementing sustainability is represented by the bureaucratic obligations of formally changing course and programme syllabi. To include sustainability, the expected learning outcomes of courses/programmes need to be revised to ensure that students will be examined on their knowledge and skills related to the sustainability aspects as they apply to each course/programme. This study has unveiled how complying with such bureaucratic requirements demands additional time, precludes a flexible and experimental approach that could prove beneficial and – above all – requires consensus amongst the involved teachers. These challenges show that implementing sustainability concerns not only individual academics but also the management of higher

education institutions. Intrinsic motivation may not last if organizational structures and leadership are not supportive on the practical level and in the long run. This additional result indicates how institutional work (Empson *et al.*, 2013; Hwang and Colyvas, 2011; Lawrence *et al.*, 2011) is a multidimensional phenomenon taking place within higher education institutions at different speeds in the course of time.

Implementing sustainability is not easy because it is a change that involves individual academics, research teams, departments, faculties and entire higher education institutions. It is both an organizational and human issue. As highlighted above, Kristianstad University faces the various barriers known in the literature (Avery and Nordén, 2017; Barber *et al.*, 2014; Ferrer-Balas *et al.*, 2008; Lambrechts *et al.*, 2017) that can hamper the process of integrating sustainability. However, the case of Kristianstad University shows how the small size of the organization may be an advantage and explain why various initiatives related to sustainability have taken place. In a smaller university, academics engaged in institutional work aimed at integrating sustainability are likely to have close connections to like-minded colleagues, enabling them to activate change processes. The dialogue amongst colleagues within and across disciplines may be feasible, making it possible to overcome the silo thinking (Barber *et al.*, 2014; Dmochowski *et al.*, 2016) that hinders cooperation.

The case of Kristianstad University seems to corroborate the important role that educators have in implementing sustainability (Barber *et al.*, 2014; Warr Pedersen, 2017), but it points even more to the necessity of joint efforts (Avery and Nordén, 2017; McMillin and Dyball, 2009; Meyer *et al.*, 2017). Yet, although some progress has been made and efforts to create a multi-disciplinary approach have become more evident, more needs to be done to achieve an inter- and trans-disciplinary approach (Di Giulio and Defila, 2017; Meyer *et al.*, 2017) to sustainability.

By considering the difficulties mentioned above, the six authors of this paper have reflected on possible practical solutions. As previously remarked by Rusinko (2010), there are different options, ranging from a revision of existing structures (i.e. integrating sustainability into existing courses/programmes) to the establishment of new structures (i.e. creating new, trans-disciplinary sustainability courses/programmes). One step forward, which is currently being discussed, would be to start from the SDGs that bind the various disciplines and consider what can be taught to students and in what ways, regardless of their major programme of study. This means that SDGs should not just be goals to be achieved within the teaching programmes; rather but also they should be the guiding principles underlying the design and establishment of innovative courses/programmes (and research projects).

6. Conclusions

The purpose of this paper is to unveil how sustainability is integrated into the courses/programmes of higher education institutions. The research question addressed is: how do academics representing different disciplines cooperate and engage in the work of integrating sustainability in their teaching programmes? By illustrating the case of Kristianstad University (Sweden), this paper contributes to the literature focussing on the role of academics as educators on sustainability issues (Mulà *et al.*, 2017; Warr Pedersen, 2017; Avery and Nordén, 2017; Meyer *et al.*, 2017).

This paper emphasizes the importance of establishing a trans-disciplinary dialogue within higher education institutions that both increases the competence of academics and generates consensus. Providing forums in which to explain, discuss and learn about sustainability in a gradual way needs to become common practise amongst academics who, in turn, can implement it in their courses/programmes. Differences amongst various

disciplines need to be acknowledged and used as an asset if trans-disciplinarity is the target. Such continuous dialogue requires time and the ability to "understand" the language spoken by academics of other disciplines and fields. Therefore, the management of higher education institutions needs to be aware of the time and additional resources needed to enable academics to truly embrace sustainability with an inter- and trans-disciplinary approach. With the successful implementation of a holistic approach to sustainability, students will have better insights and understanding of both themselves and the surrounding society, laying the ground for an inclusive future society.

The case of Kristianstad University demonstrates that regular joint efforts are needed throughout the process of integrating sustainability. Joining networks such as UN GC, PRME and SDSN are a good approach to initiating change processes and stimulating individual academics to rethink of their roles as educators and researchers. However, to achieve a concrete and far-reaching change, more is needed. Academics alone, even if highly interested and intrinsically motivated, need support if they have to keep thinking of "our common future" (to quote the Brundtland Report, the World Commission on Environment and Development, 1987). The questions that need to constantly be on the agendas of both academics and managers are: How do we get to the next step in the development process that we are undergoing? How can we take advantage of the knowledge and competence of other programmes and colleagues? Which communication and information dissemination channels exist, and which new ones can be started and developed? Most importantly, how do we and our colleagues concretely work to pursue the SDGs? Finally, sustainability and SDGs are not confined to a single higher education institution but are part of national and international agendas. Therefore, being engaged in wider networks could benefit the academics that need to develop their inter- and trans-disciplinary knowledge of sustainability.

Sustainability and SDGs are part of teaching programmes, as well as research projects and, in a wider perspective, of the surrounding society. It seems that common goals, which bind various disciplines, both in teaching and research, could be to develop sustainable cities and communities (i.e. SDG 11) and good health and well-being (i.e. SDG 3). How can the knowledge and competence of academics in business administration, computer science, education science, environmental science, food and meal science and nursing science contribute to sustainable cities and communities, which – in turn – can support other goals such as good health and well-being? This paper does not attempt to answer this last – maybe provocative – question as it presents the results of first and preliminary cooperation in such a direction. More research analyzing the progress made with the integration of sustainability within higher education institutions is needed and the focus needs to turn from the role of individual academics to include the role of management as well.

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