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Education for Sustainable Development

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Abstract

Based on a report made by the Swedish Higher Education Authority from 2017, which covered all of Sweden's 47 higher education institutions, this paper examines the work with sustainable development at universities. The text also gives suggestions on how the area could be developed for those institutions in higher education that have not yet measured up to the criteria for successful sustainability work. The analysis bases its findings on the Swedish National Defense University as a case and a representative for a smaller university but identifies general lessons that are applicable to other universities. The text also identifies lessons from current pedagogical research in higher education and highlights success factors taken from three other higher education institutions that have received high ratings for their sustainability work. The universities that have been successful in this work show that integrating a sustainability approach initially in the daily operations does not have to include all aspects of sustainable development in business planning and education. On the other hand, the aim must be clearly set on a holistic and interdisciplinary approach, where education for sustainability initially creates a base from where issues that are more complex can be included, and generate education specifically aimed at promoting sustainable development.

KeywordsSustainable Development -Higher Education Institutions -Agenda 2030 -Sustainability Assessment -Resistance to Sustainability

1 Introduction

We live in a time where demands for change of an unsustainable lifestyle have become an increasingly urgent matter that demands the full attention of the whole society. One important way to address these issues is through implementing theories, methods, and new ways of engaging with sustainable development (SD) in higher education. If the universities' mission is to shape the leaders of tomorrow and educating the people who will develop and oversee society's institutions, this sector has a profound responsibility to increase awareness, knowledge, and the technologies that can create a sustainable future (Cortese *1992*; Disterheft et al. *2013*; Forstorp and Jers *2019*; Martin and Jucker *2005*). Education for sustainable development (ESD) is a "key" and "core" to advancing sustainability in higher education (Isenmann et al. *2020*, p. 1), and is not only an idealistic approach described in terms of moral-ethical dimensions, but also forms the basis of a comprehensive political agenda both in the EU and in Sweden. The EU policy framework is built around the well-known Sustainability Development Goals (SDGs) which are a universal set of goals, targets and indicators that were adopted by all United Nations Member States in 2015 to end "poverty in all forms" by 2030 "and balance the three dimensions of sustainable development" (UN *2020*). As part of the new sustainability agenda, every country is requested to incorporate the 17 goals into their agenda and political policies and to actively work toward their achievement (Leal Filho et al. *2019*). This work is supported in Sweden by the Higher Education Act, which prompts the Higher Education Institutions

(HEI) in Sweden to work actively in endorsing the SDGs, contribute to maintaining an inclusive society, contribute with research in these fields globally and promote a lifelong learning (SFS *2005*). The Swedish Environmental Code, which was adopted in 1998 and put in force 1999, also plays an important part as supporting the work with sustainability (Government Offices of Sweden *2000*).

In practice, however, fully integrating a sustainability agenda into the universities educational programs have proven not to be so straightforward, and there appears to be a lot of disparities between different HEIs in terms of how the work with implementing SDGs are conducted (Leal Filho et al. *2019*), and also different understandings among the teachers themselves on how the goals ought to be realized (Sammalisto et al. *2015*). There also seems to be a substantial lack of robust concepts and sound methodologies providing guidance and delivering orientation on how universities and other higher education institutions may develop their specific ESD profile (Isenmann et al. *2020*).

As a result, many HEIs are struggling with the implementation of the SDGs in their curricula, which on a wider note can have negative effects for the overall integration of sustainability goals in society (Chankseliani and McCowan *2021*; Findler et al. *2019*).

Based on the arguments stressed above, where one highlights a moral responsibility of the universities in providing society with the knowledge that will help to preserve a world for future generations, while the other highlights a statutory duty for the same purpose, we ask ourselves, how can the agenda on ESD become more straightforward and accessible for universities? This is an especially important point to consider when it comes to smaller niche universities, as these might not possess the same resources and wide range of scientific disciplines as the larger education institutions do, and therefore might not be able to keep up with the current speed of the sustainability agenda. In order to shed more light on this particular issue, we have chosen to look at the work on sustainability in higher education as carried out by the Swedish Defense University, since this academic institution typifies a small-scale university that is highly specialized in a specific context, namely, that of defense, crisis management, and security. Special interests of inquiry is focused on how the work with SDG is implemented in education and in the organizational setting and to identify how this area could be developed to become a more naturally integrated part of the academic operations.

Of particular importance in this work is the contradiction that exists between sustainability as an operational goal for universities, expected to be holistic and inter-disciplinary, while change requires specific limited measures to be successful, a more practice-oriented strategy. For universities that has not fully implemented sustainable development in their curriculum, these are important steps for progress, but there are also some issues and pitfalls that need to be identified and hopefully avoided.

This study initially starts with a definition of our perspective of the concept of sustainable development and its relationship to pedagogical research, while also giving some attention to current developments in the area of sustainable development in higher education. After that, we will look at the evaluation made by the Swedish Higher Education Authority that began in 2016 where 47 higher education institutions, based on a self-assessment, described their work with sustainability issues (Finnveden et al. *2020*; UKÄ *2017*). Drawing on the experiences from the case study of the Swedish Defense University, which exemplifies a small university that is highly specialized, we will examine opportunities and obstacles in developing sustainability from the perspective of a holistic approach and practical implementations. Three other higher education institutions have also been studied, mainly KTH – Royal Institute of Technology, Linnaeus University, and the University of Manchester, all of which have distinguished themselves for their successful integration of the sustainability perspective in education and operations, and thus provide useful lessons on practical measures that have had a successful impact in the educational settings. After that, we will end this chapter with a discussion on

obstacles and opportunities of integrating sustainability in the educational curriculum, as well as suggestions for how this area can be further developed and incorporated in the organization.

1.1 Methodological Approach

In order to deepen our understanding of how the agenda on ESD can become more straightforward and accessible for niche universities, we performed a descriptive case study, using the Swedish Defence University as an example of a small niche university that is in an embryotic phase when it comes to fully integrating SDGs. Case studies have been described as an ideal methodology when a holistic, in-depth investigation is needed, and tends to be selective, focusing on one or two issues that have a fundamental value in the comprehension of the system being examined (Tellis *1997*). The text analysis on which we base our case study consists of a self-assessment that the Swedish Defence University conducted prior to the investigation by the Swedish Higher Education Authority, as well as several other policy documents on which the university support their work on sustainability both in the curriculum and in the organization.

We also chose to look at three other higher education institutions, KTH – Royal Institute of Technology, Linnaeus University, and the University of Manchester, three universities that have come further in their implementation of ESD, and which have received high ratings in different evaluation tools for their work with SDGs. The University of Manchester was chosen as an international reference, and because their organizational architecture has been described as particular successful of incorporating sustainability goals (Appleton *2017a*, *b*).

In addition to the case study we also conducted a literature review on the pedagogical research on ESD using a qualitative text analysis method with a semi thematic approach (Bryman *2015*). The literature review focused on Sustainability + Higher Education + Developments, both in terms of theoretical foundations and practical implementations. In the analysis of the literature review, we identified three themes; SD as civic education; Methods for integrating ESD; and lastly Resistance to adopting ESD.

1.2 Limitations of this Study

This study is looking at a small-scale university in a Swedish context, that has a highly specialized purpose and the experiences made from this case might therefore not be applicable for other cases. Another critique that has been raised by Corcoran et al. (*2004*) is that case-study research in sustainability for higher education is not transformative or problematizing enough, but instead tends to favor a descriptive practice that identifies and, sometimes contribute in sustaining, a dichotomized structure. While we partly agree with this critique, we also believe that the general lessons made from this case study can contribute to deepening the understanding of the processes involved when a learning institution seeks to change an old identity and assume a new paradigm, while also offering some practical solutions for how this integration could follow through. Another limitation is the sustainability assessment tool designed by Swedish Higher Education Authority that based its findings on a self-assessment, conducted by the Swedish Defence University themselves. Even though this type of self-assessment tools can be criticized for only giving part of the full picture, they are valuable as they can provide the HEI's with a first diagnosis, and define areas of improvement (Caeiro et al. *2013*).

2 Sustainable Development and Higher Education

Sustainable development is a multifaceted concept, which includes a diversity of perspectives that influence decision-making processes which needs to be taken into account based on their mutually complex interactions and dependencies (Brooks *1992*). *The Brundtland definition* , which appeared in the report "Our common future" released by The United Nations Commission on Environment and Development (UNCED), have had an extensive influence on the global sustainability agenda ever since it was introduced in 1987 (McKenzie *2004*) and is today operationalized by UN's 17 SDGs in the Agenda 2030 (UN *2019*). Sustainability according to this definition is a broad ethical principle, based on an anthropocentric worldview that is built around three dimensions of economic, ecological and social sustainability. Implicit in this definition is an expanded responsibility set for all authorities as well as other organizations worldwide, toward society in its broad meaning, to actively promote values of sustainability, ethical liability and accountability, and assure that the needs of the current generation, of the entire world's population, is met without the needs of future generations being diminished (Leal Filho et al. *2019*; Rösch *2017*; Seay *2015*). However, both the Brundtland definition and the sustainable development agenda has received criticism since its introduction. One critique that has been raised is that the definition is too ambiguous and therefore invites a host of different understandings, which can be utilized in order to perpetuate, expand, or catalyze efforts that are unsustainable, ultimately manifested in what has been deemed "green" capitalism (Ben-Eli *2018*; Greenberg *2013*; Robinson *2004*; Rose and Cachelin *2018*).

In this study, we have defined the diversity of perspectives included in Agenda 2030 represented by economic, ecological, and social sustainability, as *the first dimension of sustainable development in higher education.*

Another theme discussed in relation to SD in higher education is a distinction between SD as a learning goal ESD and SD as an organizational goal, which is based on the holistic interpretation of the term applied to the university's institutional structure (Disterheft et al. *2013*). However, this approach can lead to a double problem of *paradigm and provision*, as referred to by Sterling (*2004*), which occurs when the view of SD as a pedagogical idea is set against the other approach where it instead is seen as a practical measure. In this view, sustainability is both education *for* change, as well as education *in* change. There is also a call for broadening the term to include a more process-orientated approach that covers *how* things happen, i.e., the dynamics of a classroom, decision-making processes, organizational structures, leadership strategies, and strategic planning initiatives (Moore *2005*). In other words, the challenges for the institutions of higher education when it comes to reconsidering disciplines, institutional practices and the overall mission of sustainable development itself are profound and all encompassing (Corcoran and Wals *2004*).

2.1 Pedagogical Research

In pedagogical research, the concept of SD in higher education has been discussed since the late 1980s (Caeiro et al. *2013*) where a general trend is that ESD has evolved from a purely ecological perspective to increasingly embracing ethical values as well as social goals (Disterheft et al. *2013*; Everett *2008*; Seay *2015*). The pedagogical application of SDGs have also been the result of deeply embedded cultural, contextual, and ontological differences that exits within different disciplines (Redclift *2005*), which has resulted in many discipline specific descriptions of sustainable development focusing on various aspects depending on the context in which the concept appear (Dempsey et al. *2011*; McKenzie *2004*).

When analyzing the research that has been done linked to ESD in HEI, three themes emerge. We have called the first theme *Sustainable Development as civic education*, which lifts a critical eye at what sustainable development in higher education is, and whether it has been successful in achieving its basic aim. The second theme is called *Methods for integrating ESD* and addresses methods and practical approaches to integrating sustainable development into the education and the last theme is called: *Resistance to adopting ESD*, which attempts to describe why this transformation work is occasionally experienced as stagnant and met with reluctance.

2.1.1 SD as Civic Education

The starting point in the first theme is based on a view of SD as part of a civic education where the premise is that the purpose of higher education should primarily contribute to the development of good citizens (Bohlin *2018*). Universities around the world are the preservers of the most advanced knowledge in society, which means that they, both in their education and institutional practices, act as role models for the rest of society. In this regard, the institutions of higher education can be critiqued for having failed with achieving one fundamental goal, namely, to produce leaders and innovators who comprehensively addresses one of humanity's most pressing problems today, and this failure should provoke a critical debate concerning the role that universities play in society (Martin and Jucker *2005*). Not only have they failed, but they are also partly responsible for the situation we face today, and are still to some extent leading the way in advancing the kind of thinking, teaching, and research that has accelerated an unsustainable way of living (Wals *2010*). Therefore the responsibility to rectify this wrong should be a highly prioritized task on the Universities agenda (Everett *2008*). Universities have an important role in the actualization of SDGs, through their role in human formation, knowledge production, and innovation (Chankseliani and McCowan *2021*). This responsibility clearly moves beyond purely ecological initiatives to embrace human rights, anti-corruption and citizenship, yet there seems to be substantial problems with combining the scope of responsibility in connection to the three dimensions of sustainability, within the value chain, i.e., the organizational content (Fleacă et al. *2018*). According to Findler et al. (*2019*), it is also difficult to systematically account for the impact that HEI's have on sustainability goals, especially when it comes to long-term effects, cultural aspects, and impacts on policy, social cohesion, and individual behavior. It is however crucial for the universities to reflect on their role as agents of change by actively promoting SDGs in their curriculums (Leal Filho et al. *2019*). This perspective is especially important to consider from a global perspective, where Universities have an important function in developing countries for spreading a deepened understanding of SDGs (Anderberg et al. *2009*).

2.1.2 Methods for Integrating ESD

The second theme describes different methods and models for how to integrate SD into the universities curriculums. This can be viewed from an "outside perspective" where SD is something that is added to the existing education or from an "inside perspective," where SD is something that is generated by teaching per se (Disterheft et al. *2013*). Sterling (*2004*) suggests two ways for integrating SD to the existing education: either as a partly perspective where SD is wedged into an already existing system that remains relatively unchanged, or as a full assimilation of the educational content, which means a more in-depth approach with comprehensive transformation as a result. According to the first approach, sustainability becomes a more general "education *in* sustainability," while the second level becomes a more in-depth "education *for* sustainability." Isenmann et al. (*2020*) suggest the application of a three-way methodology referred to as a "morphological box." The first step is to analyze the current state of implementing ESD; secondly, based on the findings in this analysis to fine-tuned and tailor course development considering ESD on different levels of action; and thirdly, when taking a

"whole-institutional" perspective for the entire university to develop a unique and coherent university specific to the ESD profile. HEIs also need to pay attention to competence-based education and specifically link pedagogy that promotes sustainability, systems thinking, and has an interdisciplinary approach (Lozano et al. *2017*).

In this chapter, the need for both education *in* SD (adding to a general SD literacy) as well as education *for* SD (focused on discipline specific knowledge and skills) is identified as *the second dimension of sustainable development in higher education.*

The methodological theme also addresses issues that relate to how those who practically work with the implementation of sustainability in the daily teaching routines can be motivated to full heartedly embrace this perspective. One major critique in this field is that the incorporation of SD into curricula requires systems thinking and interdisciplinary approaches and calls for pedagogical innovations that provide interactive experiential transformative and real-world learning. Most of the efforts to incorporate SD into curricula's have focused on curricula design and delivery on learning outcomes (Lozano et al. *2017*).

Research has shown that autonomy is an important motivating factor, while it is also beneficial to provide teachers with opportunities that aims to open up for reflection on how they can classify their courses and apply their own research discoveries based on sustainable development (Mulder et al. *2013*; Sammalisto and Lindhqvist *2008*). Studies have also shown that there is a large variation in how sustainability is perceived and hence integrated into education, which ranges from waste separation to a complex understanding (Sammalisto et al. *2015*). Learning opportunities for teachers should introduce critical thinking, reflection on sustainable consumption practices, and modeling of effective pedagogies. The shift to an emergent sustainability worldview must come from within an innovative higher education curricula that foster interdisciplinary thinking, a sense of agency and a "planetary consciousness" (Merritt et al. *2019*).

2.1.3 Resistance to Adopting ESD

The last theme that emerges in pedagogical research revolves around why integrating SD as a business goal in higher education, occasionally is met with resistance (Appel et al. *2005*; Martin and Jucker *2005*; Moore *2005*; Mulder et al. *2013*; Savelyeva *2012*). Obstacles that resist change exits on several levels, both for those who make decisions in the organizations and for those who are engaged in education, where the integration of SD in each discipline presents an intellectual challenge (Appel et al. *2005*). Savelyeva (*2012*) have suggested that the fragmented structures of the academic organization itself forms a structural trap that tend to resist change, especially when facing a holistic transformation that does not follow the linear model that compartmentalized university's tend to be better equipped to follow. In essence, the changes that are sought requires a cultural shift that has to be incorporated, embedded, implemented, and introduced (Peet et al. *2004*). While another suggestion, made by Strengers and Maller (*2014*) is targeting the need for a shift from a previously prevailing view of change based on an individualistic behavioral plan to a new view of governance and institutions as a socially shared practice.

A further explanation, that is also symptomatic for the general society, addresses why there is resistance of implementing practices and a sustainability "mind set" where the specific nature of complexity and contradiction in sustainable development is attributed as a form of "wicked problems." These type of problems are often met with neglect as the threat posed by future social and environmental disasters is perceived as relatively diffuse, which has a negative impact on the motivation to initiate change (Strengers and Maller *2014*; Weber and Khademian *2010*). This

complexity can also be expressed as a "value-action gap," where motivations to engage with and behave in a sustainable way does not correspond with the measures that are actually taken (Chaplin and Wyton *2014*). From a purely academic point of view, the intricate nature of these issues where several relevant value lenses overlap, urges for a new interdisciplinary approach. This means that different disciplines must actively seek new paths and partially reformulate old identities, which can create great challenges for teachers (Edvardsson Björnberg et al. *2015*; Falk *2019*; Liwång *2020*; Wolrath Söderberg *2017*). We have identified the urgent need for several different scientific disciplines as well as an inter-disciplinary approach in this chapter as *the third dimension of education sustainable development.*

2.1.4 In Sum

We have hitherto identified three dimensions of education for sustainable development, which are:

1. The diversity of perspectives required exemplified by economic, ecological and social sustainability or UN's 17 goals for sustainable development.
2. A need for both education *in* sustainable development and education *for* sustainable development.
3. A need for several different scientific disciplines as well as an inter-disciplinary approach.

These three dimensions represent the knowledge aspects needed in order to address SD holistically.

3 Examples of Work with Sustainable Development at Higher Education Institutions

The Swedish Higher Education Authority received a commission on March 2016 by the Swedish government to carry out an evaluation of the work conducted by institutions of higher education to promote sustainable development. The Swedish Higher Education Authority asked Sweden's 47 higher education institutions to write a self-assessment based on a given template, on which the overall assessment in large parts was based on. The self-assessments was composed of three areas, which together constituted nine assessment criteria. The three areas that were covered were governance and organization; environment, resources, and areas; and lastly, design, implementation and results. The study showed that among the universities examined, only 12 universities succeeded in reaching the higher criteria for successful sustainability work. Another result that emerged was that the higher education institutions had widely differing views on sustainability concept itself, which in turn affects the practical implementation. The area where the vast majority of HEIs did not perform well enough was governance and organization, where less than half of the participating higher education institutions fulfilled overall goals for the integration of SDGs (Finnveden et al. *2020*; UKÄ *2017*). Few HEIs were found to work with specific pedagogical measures in relation to SDGs (Finnveden et al. *2020*). In an article analyzing the conducted review, Finnveden et al. (*2020*) have identified five factors that are particularly important for the comprehensive approach needed for a successful implementation of sustainable development. These are:

a. Decide on overall goals for the integration of SD and conduct a follow up to check on their progress.
b. Create a dedicated organization with its own resources for sustainable development.
c. Base this work on established definitions and Agenda 2030.
d. Avoid solutions that only include parts of the organization.

e. Recruit individuals that have knowledge and commitment in issues connected to sustainability when decision-making positions within the university are to be filled.

3.1 The Swedish Defense University

The Swedish Defense University primarily conducts education and research in defense, crisis management and security. The Swedish Defence University's military educational tradition stems from the Swedish higher artillery education which was established in 1818, and since 2008 the university been an accredited institution for academic education for both military and civilian students. The number of students attending the University is approximately 800 with 220 seats offered to aspiring officers in the year of 2020 (Försvarshögskolan *2020*). The university bases its implementation of efforts related to sustainability on a number of different governing documents and a new vision has been defined (FHS *2020*) where different perspectives such as internationalization, gender equality, higher education pedagogy, and flexible learning occur. This vision also indicates that the Swedish Defense University should contribute to a "sustainable societal development" (FHS *2020*). However, the document lacks a definition of concrete measures on how to achieve this.

The self-assessment made by the Swedish Defence University prior to the Swedish Higher Education Authority's review describes that although SD is naturally occurring in research conducted on robust societies and the nation's resilience, it has had not been explicitly prioritized on a central level, as it is not a clear profile in the university's curriculum. The self-assessment also highlights two specific areas where SD falls naturally, UN Resolution 1325 and civil protection and security, where several important steps have been taken (FHS *2016*). Despite these efforts, however, the Swedish Higher Education Authority does not consider these measures to be enough and concludes, "The Swedish Defense University has so far not prioritized issues of sustainable development in accordance with the intentions of the Higher Education Act. Even within the two priority areas, which from the perspective of sustainable development are too narrow, the UN Resolution 1325 on women, peace, and security, as well as civil protection and security, there has largely been a lack of an active and systematic approach."

Like many other higher education institutions that were criticized by the Swedish Higher Education Authority, some organizational shortcomings are also highlighted (Finnveden et al. *2020*; UKÄ *2017*). There is, for an example, no working group in the organization today that handles a more holistic approach to sustainability as both an educational and organizational goal. Although the Swedish Defense University has made progress in incorporating gender as an analytical method in the education, sustainability issues have not sufficiently addressed been, and there is still a lack of clarity and specific measures taken to incorporate SD in the education.

3.2 Examples from Other Universities

Although the majority of HEIs that participated in the Swedish Higher Education Authority's review did not measure up to the criteria set for implementing sustainability in their organizations, there are a few exceptions. Out of these, KTH – Royal Institute of Technology appears as a paragon on the integration of SD in the education, research, and the institutional structure. This work started in 2011 whit the establishment of the KTH – Royal Institute of Technology Sustainability Office to promote organizational goals and measures and support the work of integrating SD in all educational programs. In the beginning, these ambitions were in large expressed as environmental goals, but as the work progressed a focus on overall SDGs have been formulated. As for today, the overarching goal is the full integration of SD into all educational programs on all levels, in order to provide the students with

the proper tools they need to contribute professionally to SD on a societal level after completing their degree.

The university also has a comparatively long tradition of research in topics related to SD, which plays an important role in the education. Furthermore, KTH – Royal Institute of Technology has worked to promote issues related to SD both interdisciplinary and in association with other universities. In addition, the university have also actively collaborated with representatives from different companies and authorities to get a better insight in what kind of knowledge and skills linked to SD that are required to better equip students for their future working life. Several courses focus on the interdisciplinary integration of SD, in collaboration with both companies and students (UKÄ *2017*). As a result, there is also a relatively extensive pedagogical research on ESD, which among other things, manifested in a course of 4.5 credits on pedagogy for SD for teachers. Research has been conducted that relates to sustainability in the pedagogical development with different pedagogical approaches (Malmqvist et al. *2019*), highlighting and identifying pedagogical challenges (Edvardsson Björnberg et al. *2015*), and exposing differences in methods and results between education on SD and ESD (Liwång *2020*).

Linnaeus University is another Swedish university that stands out as a role model. The university's document vision and strategy 2015–2020 states that all students and staff are ambassadors of ideas about SD. Sustainability goals regarding education, collaboration, student participation, and competence development of employees are stipulated in a 3-year prolonged action plan. There is a special working committee devoted to issues of sustainability functioning at the university, which conducts an annual inventory of the proportion of degree projects related to SDGs and checks the integration of SD into the education programs. There are wide ranges of activities to strengthen the employees' competence, such as annual theme days where students are rewarded who have made significant contributions. There is also a wide range of courses linked to the three dimensions of SD, ecological, social, and economic, with a clear representation of research in the field (UKÄ *2017*). The university works actively with pedagogical development on sustainability and also conducts courses in this area (Carleklev et al. *2020*).

As an international reference for SD in HEI, the University of Manchester is of great interest due to its high ranking on the THEs Impact Ranking. THEs Impact Ranking is based on the sustainability goals stipulated in the UN SDGs and is an international comparison where 767 universities from 85 countries have been included (THE *2020*). A case study of the British University's sustainability work (Appleton *2017a*, *b*) shows that the University of Manchester has a decentralized structure and that SD is part of the university's three strategic goal of social responsibility. However, the university also has a special office responsible for following up strategies within the area of sustainability, which is supported by an academic lead liable for SD within the academy as well as overseeing how well SD is integrated as a pedagogical concept in the education (Appleton *2017a*, *b*). A dedicated management is responsible for the centralized solution for SD as well as for ensuring the integration of SD in the areas of education, research as well as other activities. The advantage of this model is that SD is a clear strategic goal and at the same time integrated into the current tasks and roles (Appleton *2017b*).

Success factors taken from these HEIs above reveals three things that are especially important for the realization of sustainability as an operational and pedagogical goal. Firstly, the management present in the institution must be dedicated to integrating sustainability goals into the organization and tend to the prioritization of these issues. Secondly, this approach must be interdisciplinary and take place from a broad front and thirdly, employees should be encouraged to embrace this perspective based on their own circumstances. This both supports the three dimensions identified in Sect. 2 and the

comprehensive approach described in Sect. 3.1. Overall, the work of integrating sustainability into the organization and education is quite extensive, however when the initial work is done, these efforts will eventually become self-generating. There is a general tendency, symptomatic partly for the universities described above, that sustainability issues mostly focuses on ecologically SD (environmental issues). Among the concrete broad measures, there is also an imbalance between education *in* sustainability and education *for* sustainability where the former category has received more attention. This means that even the successful institutions have started with an approach that, to some extent, have been limited in relation to dimension one and dimension two of education for sustainable development.

4 Analysis and a Way Forward

In this section, we will tie the perspectives on the research on ESD together with the assessment made by the Swedish Higher Education Authority and highlight some prospects and obstacles.

Based on the Swedish Defense University's specific role in society with an extensive knowledge in defense, crisis management and security, the university has an important function to fill, but need to clearly identify and relate the content of the courses to SD. Characteristics that are highlighted as favorable from the perspective of "awareness of sustainability as a civic education" are primarily problem-solving ability, utilization of opportunities and participation, systems thinking, critical thinking, creativity, and ethical awareness (Wolrath Söderberg *2017*). From the perspective of the successful HEIs described above, they initially worked with a selected area of SDGs (often those related to ecological issues) and then gradually assumed more holistic perspective by tackling larger and more complex issues.

In regards to the integration of sustainability into the education, it is clear, judging from the Swedish Higher Education Authority's report from 2017, that both an outside and inside perspective is important. This have to come from within the organization, but also requires the input of an outside perspective. In sum, both education on SD and ESD are required, where the latter integrates issues related to SD into the discipline-specific courses. In addition, this approach needs to be complex, interdependent and interdisciplinary, which means that different disciplines must actively seek new paths while also reformulating old identities (Everett *2008*). Another influential factor, which has benefited both research and innovation in a positive way, are collaborations between government research, commercial actors and other stakeholders. Successful HEIs have initially focused on education *in* sustainable development and then gradually developed education and research *for* sustainable development. However, education on SD proves to be important as it ensures that both students and the HEIs can connect activities, knowledge, and perspectives with the SDGs.

In relation to resistance of integrating SD, there is a traditional view of organizations as being sluggish and reluctant to change (Dent and Goldberg *1999*). This sluggishness is also symptomatic of society as a whole. Paradigms are shared ideas in the minds of society, constitutive of unstated assumptions that shape society's deepest set of beliefs about how the world works. Since this part of the puzzle is the most difficult one to solve, it is often met with neglect in hope that it will eventually solve itself (Meadows *1997*). Here, a solution may be to turn the gaze from an individualistic behavioral plan to a new view of governance and institutions as a socially shared practice (Strengers and Maller *2014*).

To meet these points within the framework of the university's activities, we will now continue to describe proposals for various measures from the perspective of governance and management, research and education. The focus of this work is on education, but a discussion of educational development also presupposes a relationship to research and management.

4.1 Recommendations in Relation to Governance and Management

To achieve effects in research and education, there is a need to specify the university's ambitions in relation to SD. One overall problem is that the functions of learning and teaching, research and administration/governance are approached separately, when in reality they are interconnected (Leal Filho et al. *2019*). These specific goals must apply to the role that SD has at the university and how the HEIs views their own role in society. In regards to the management of education, as well as for the educational programs, one important starting point is that the HEI set clear requirements on the minimum number of courses that directly and indirectly should relate to SD. Both the Swedish Higher Education Authority's report (2017) and research studies (Sammalisto and Lindhqvist *2008*) have concluded that faculties in higher education has a hard time imagining how to approach the implementation of SDGs in the education. To approach this staleness, it is important to develop support and competence-enhancing efforts for teachers to provide them with a deeper understanding of what the sustainability perspective practically means. It could also be useful to provide a timetable for the implementation of direct measures regarding the education on SD to provide opportunities of broaden activities in a few years.

Another recommendation is to expand the sustainability concept itself. It is common to reduce the sustainability concept to ecological and environmental initiatives, but sustainability encompasses a breadth of different angles that together provide a more dynamic and complete picture of what sustainability in its essence is (Chankseliani and McCowan *2021*; Disterheft et al. *2013*; Findler et al. *2019*; Leal Filho et al. *2019*). For example, social sustainability is often a neglected aspect of the sustainability concept, which is a particularly important aspect in relation to the role of HEIs as civic role models (Martin and Jucker *2005*), and also plays a fundamental part in the context of the Swedish Defense University, since societal vulnerabilities have profound effects on security issues (Enarsson and Pease *2016*). Themes such as social justice, societies' resilience and security, as well as gender issues could all fall naturally as an initial focus within the framework of the Swedish Defense University's area of activity and could therefore become a unique profile that complements and collaborates with HEIs greater focus on ecological sustainability. This is an example on how a specific niche university can and must focus as well as articulate how that specific niche interacts with sustainability along the dimensions of SD.

4.2 Recommendations in Relation to Research

For HEIs, the connection between research and education is pivotal and if there is to be a progress in the curricula based on SD, the research have to reflect this idea. Research on SD can contribute to strengthening society's resilience, which in turn is an important step for the implementation of SD. Since the dynamic between education and research is complementary, the education can also contribute to strengthening SD. In relation to the Swedish Defense University, this can, for example, be expressed in research on how the connection between SD and defense, crisis management and security is materialized and what possible effects that will arise from these practices. For this endeavor to be successful, however, there is a need for clear incentives in the HEIs as well as a disciplinary openness to thread on new paths, since an interdisciplinary approach is necessary in order to reach these goals. Conducive of this work, is also collaboration between the university, authorities, organizations, and other societal stakeholders. When the HEI conducts education on SD and prioritizes sustainability goals, it creates a common ground for research that has an explicit relationship to SD. This in turn will also generate relevant and context specific ESD in the long term by embracing the third dimension of SD which has been described above.

4.3 Recommendations in Relation to Education

To make sure that the education is relevant for the expansion of SD and that there is education *in* as well as *for* SD a course specifically for that purpose should be included in all educational programs. SD could be included in a university-wide course per level of education, i.e., one at the undergraduate level, one at the advanced level, and one at the doctoral level. While these courses should be context specific and provide basic knowledge of sustainability challenges in a certain area, they also need to assume an interdisciplinary approach in order to successfully tackle them (Chankseliani and McCowan *2021*). The education should also promote qualities that are generated from the education, such as problem-solving ability, systems thinking, critical thinking, creativity, and ethical awareness (Wolrath Söderberg *2017*). It is also essential that there is a clear progression in the courses and that these are relevant to the disciplines in which the university is specialized. These courses will also promote the establishment of a clear baseline from where ESD for both teachers and students integrates as a natural component in the learning environment.

Based on the experiences from successful institutions in higher education, it is also important to establish working groups that purely focus on educational activities for sustainable development, in both content and in theory. This working group should function as a positive force to further develop and continuously strengthen the connection between education and research and provide suggestions for improvement on practical issues that can arise when integrating sustainable development in the education. Another task for this focus group could also be to arrange workshops and other forms of training opportunities, which spread the knowledge on sustainability to the entire university.

5 Discussion

To equip society with the skills necessary for a sustainable future, sustainability, as an educational goal, should be integrated into several different (all) areas of knowledge production. However, the comprehensiveness of possible application areas and approaches poses a challenge when a university is to build a systematic sustainability work (Fleacă et al. *2018*; Leal Filho et al. *2019*; Sammalisto et al. *2015*; Savelyeva *2012*). This process cannot occur by itself but needs to prioritizations and delimitations, while at the same time assuring the teachers' autonomy (Sammalisto and Lindhqvist *2008*). Different colleges and universities have different approaches and perspectives for tackling sustainability challenges where, for example, there are differences in disciplines, organizational structures, and regional circumstances. However, the challenges we face, both today as well as in the future, require long-term perspectives and orientations in terms of both research and education.

There is a clear demand for holistic approaches of integrating SD at HEIs, which includes the full comprehension of the three dimensions of SD. However, it is not possible, especially for small institutions, to approach these aspects without prioritizing and a gradual build up. There is a demand for a systematic work that encompasses the whole university, practically as well as theoretically, where the full width of sustainable issues ranging from environmental, economic, and social sustainability are present. This study indicate that the following must be a part of a HEI agenda;

- A coordinated work in relation governance and management, research and education. Without such a university-wide approach, the development will not be sustainable.
- An aim toward education *in* as well as *for* SD. However, education *in* SD must come first in order to create a literacy and comprehension of SD which is essential for a more discipline and niche specific research and education *for* SD.

To meet these two requirements, one suggestion could be to limit the initial scope of SD, i.e., to propose an initial focus on a cluster of SDGs. The universities that have been successful in implementing sustainability have often, in an initial phase, limited the scope of SD to focus on environmental concerns. This means that in order to rebalance the holistic understanding of sustainability there is an urgent need to redirect the attention to encompass the non-environmental aspects of sustainability. To do so, but also to make the task easier to comprehend, HEIs that so far have not had an integrated SD tradition, must identify a specific cluster of SDGs that fit with their own areas of education (Leal Filho et al. *2019*). However, an initial focus on a specific SDG must also reflect the complexity that SD represents and should be the starting point aiming for a work with SD that take on the full width of the challenges along the first dimension of SD described in this paper.

SD is not only a highly contemporary item on the HEIs agenda, but also constitutes a paradigm shift in how we view the function of education in our society, based on the question: *what kind of knowledge and skills do we want our future decision- and policymakers to obtain?* It is a concept that has an obvious place in a future oriented perspective, and the implementation of this perspective should thus be a priority for all HEIs that aspires for excellence. The large challenge lies in building a system where SD is both an organizational goal and an integrated part in both education and research. The latter also provides conditions for teachers' right to autonomy in regards to course design, where the right approach to raise the issue should be to open up for pedagogical discussions about various ways of integrating sustainability in the education. In order to create a strong base for research on SD, it is essential to include this approach at all levels of the education, as well as integrate more specified courses in context sensitive areas. It is also important that there is a clear incentive from the management to take matters connected to sustainability seriously and prioritize its full implementation, in order to inspire those working in the academic setting to fully embrace this perspective (Fleacă et al. *2018*; Isenmann et al. *2020*). Lastly, sustainability is a holistic, multifaceted, and interdisciplinary approach, which, however, needs to acknowledge the needs from the specific context in where it is situated. Inclusive understandings of sustainability calls for interdisciplinary input and a cohesive view of the interrelation of nature, society, and the economy, but the basic agenda of those who are performing the research will quickly determine the real meaning of the work (McKenzie *2004*). It is therefore important not to apply a reductionist understanding of sustainability as a purely ecological effort but to understand its full meaning (Greenberg *2013*; Redclift *2005*).

6 Conclusions

To equip society with the skills necessary for a sustainable future, sustainability, as an educational goal, should be integrated into several different (all) areas of knowledge production. However, the comprehensiveness of possible application areas and approaches poses a challenge when a university is to build a systematic sustainability work. This study indicate that the following must be a part of a HEI agenda: a coordinated work in relation governance and management, research, and education; and education *in* sustainable development must come first and will create a sustainable development literacy that is a prerequisite for future discipline and niche specific research and education *for* sustainable development.

To meet the requirements a starting point proposed in this chapter is to identify a specific cluster of SDGs that fit the areas of education for that specific university, without denying the complexity that sustainable development presents.

SD constitutes a paradigm shift in how we view the function of education in our society, and what we want the outcome of the efforts of institutions of higher education to be. It is a concept that keeps an

imperative place in a future-oriented perspective, and the implementation of this perspective should be a priority for all higher educational institutions who aspires for excellence.

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