
Dies Oecologicus—How to Foster a Whole Institutional Change with a Student-Led Project as Tipping Point for Sustainable Development at Universities

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Abstract

The student-led project organizing the event *Dies Oecologicus*, which aims for a whole institutional change by initiating a bottom-up sustainable development process, is described. Driven by the need for a more prominent role of sustainability in the university's curriculum, the daily lives of its members, and the governance and administration of the organisation, the initiative started off as an interdisciplinary student-led project. The university-wide event was realised based on an assessment of conducted interviews with change agents (at the University of Hamburg and other universities) at all levels of the university from several disciplines and faculties. The event *Dies Oecologicus* has been acknowledged as a single contribution to the UN Decade Education for Sustainable Development (DESD). During the event *Dies Oecologicus* participants from multiple backgrounds reflected on, discussed and created possible

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concepts of a curriculum on ESD, student-led projects and the reduction of the ecological footprint of universities. The possible concept(s) for a curriculum on ESD was based on sessions focusing on identifying essential content, adequate didactical methods and feasible curricular realisations and integrations. Results of the project were summarised in an evaluation booklet, distributed throughout the university. This participative process has proven to be a successful strategy to overcome resistance to change, influencing current reforms, empowering change agents and establishing a network. Several changes on a personal, personnel, institutional and regional level are described.

Keywords

Student-led project · Sustainable development · Institutional change at university

1 Introduction

Society faces many connected and interdependent crises, e.g. climate change and loss of biodiversity (Rockström et al. 2009). Humanity faces a second reversal of the relation between humans and nature: To survive, humanity needs to care for nature and not fight against it as it has done in the past (Stengel 2011). To overcome these crises, a huge transformation is needed (WBGU 2011). Key factors are education for sustainable development (ESD) and whole institutional change everywhere (UNESCO 2015). SD has been a key term for any institutional change since the Brundtland report pushed the concept into the limelight (UNESCO 2015). In the spirit of the claim ‘think global, act local’ there are many topics and problems to act on locally, for example Universities need transformation, e.g. integrate

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interdisciplinary studies, environmental education and push awareness (United Nations Conference on Environment and Development 1992). Universities play an important role and have a special responsibility in this process for transforming cities, regions and the world because they can analyse the drivers of unsustainability, develop sustainable alternatives, broaden the minds of future decision-makers as well as educate change agents and be role models for other public institutions (e.g. Drupp et al. 2012; Tappeser and Meyer 2011). But the progress within universities is seen as slow (Müller-Christ 2014). To bring new momentum and action to the process, a small interdisciplinary group of students at the University of Hamburg (UHH) started a movement for SD, aiming to implement sustainability in the university's curriculum, the daily lives of its members, and the governance and administration of the organisation itself. The group focused its activities on ecological aspects because this was recognised both as a deficit and as a key issue.

In this article the authors report on the student-led project as a best practice example for SD in higher education institutions (HEIs). The project took advantage of several windows of opportunity that had emerged in the form of curriculum and administrative reforms at different levels of the university. The project is backed by experiences from other institutions and recent research which confirms that ESD is a key driver for SD in society at large.

The project aiming to realize the event *Dies Oecologicus* was based on four principles: inclusion, learning-by-doing, voluntariness and grassroots democracy, and living our vision. It went through three different phases: grounding, planning and realisation, and summarizing. Each principle and phase is presented in more detail below. Furthermore, it is pointed out how each of them contributed to the project's success. While a direct measurement of success is not feasible, there is no doubt that the movement for SD at the UHH is flourishing—and that the event *Dies Oecologicus* played an important role in making that happen.

2 Scientific Framework on Sustainability in Higher Education Institutions

Before reporting on the project, the relevant literature on sustainability in HEIs is briefly reviewed. The discussion about sustainability in HEIs was triggered by important decisions at the international level. The first step was taken at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, and it was followed by the confirmation of the need for sustainable development in education through the UN DESD between 2005 and 2014 (Barth 2013). The concept of sustainability and SD has been gaining importance for academic life (Leal Filho 2010), and in particular there is an ongoing discourse about how to create sustainable HEIs (Leal Filho et al. 2015). Two different approaches have been proposed: top down and bottom up (Brinkhurst et al. 2011). Endorsers of the top down approach argue in favour of the advantages of projects that are borne by the highest level of the HEIs' management, while the bottom up approach promotes

a grass roots movement increasing engagement, interaction, and critical reflection of students and hence supporting a broad learning process within HEIs (Biedenweg et al. 2013). Many HEIs have started sustainability programs (Shields et al. 2014), and report on them with explicit reference to the top down (Bilodeau et al. 2014) and bottom up approaches. However, many initiatives have been a mixture of both approaches called ‘intrapreneurship’ (Brinkhurst et al. 2011). Intrapreneurs are actors who move within the boundaries of large institutional structures, bringing together grass roots ideas and swaying the direction of future projects; their ideas start from the bottom but are supported by the leaders (Lee and Schaltegger 2014). From this intrapreneurship perspective, the persons making these sustainability initiatives successful are at the middle levels of the HEIs’ management (Brinkhurst et al. 2011).

The literature on SD at HEIs has developed a conceptual framework and conducted case studies and comparative analyses (Karatzoglou 2013). The more conceptual literature argues that SD should be pushed in all the dimensions of the HEIs, i.e. education, research, outreach and campus operation (Amaral et al. 2015). Implementation of sustainability at HEIs (Fadeeva and Mochizuki 2010) and their role in transforming society have received special attention (e.g. Stephens et al. 2008; Ferrer-Balas et al. 2008).

Several case studies report from projects implementing sustainability at HEIs from around the world (López 2013; Chikami and Sobue 2008). A prominent example is the Research Centre of Expertise (RCE) in SD that has been created to tackle the challenges and opportunities of the UN Decade of SD. Experiences from participating institutions have shown how cooperation between various actors of society (e.g. HEIs, governments, communities, schools, etc.) improve sustainability within these regions (van Dam-Mieras and Leman Stefanovic 2008; White and Petry 2011; Sedlacek 2013; van Dam-Mieras et al. 2008a, b). Lehmann and Fryd (2008) study how HEIs and cities could work together to implement SD.

All in all, sustainability initiatives have played an important role in changing students’ perceptions. These have often been driven by the teaching side, i.e. by courses covering SD. Broadening the minds of future decision makers is crucial, but changes in the curriculum are more likely to be effective in the long-run (Zeegers and Francis Clark 2014).

Many courses and programmes on sustainability from top down, bottom up and mixed approaches have been evaluated (Wiek et al. 2014), and for the most part the assessments have been positive. Yet it has to be noted that most of the evaluations have been carried out by the persons in charge of the course or programme, which might produce a biased perspective. Nevertheless, the literature recommends introducing the ideas of SD into the curriculum to foster SD within the HEI and more importantly of the society at large (Davison et al. 2013). The United Nations Conference on SD in 2012 stated that it is crucial to “teach sustainable development concepts, ensuring that they form a part of the core curriculum across all disciplines [...]” (UNCSD 2012).

Teaching on SD should be complemented by making sustainability a core objective of the university's administration and governance, and by sustainability playing a prominent role in the values and the mission statement of the university (UNESCO 2015). Especially students have a unique role and potential in transforming universities. They can start projects and do conceptual work which would be done slower or not at all by other members of the university (Drupp et al. 2012). Looking from an organizational perspective it is important to understand Universities as "loosely coupled systems" in the sense of Weick (1976), orientated on professionals and organized anarchy (Hüther 2010). In planning projects aiming to transform universities it is important to understand this aspect of their internal decision-making processes (Hüther 2010).

3 Principles

In preparation, realisation and post-processing of the event *Dies Oecologicus* the project team followed four principles: Inclusion, Learning by Doing, Voluntariness and Grassroots Democracy, and Living our Vision.

3.1 Inclusion

The first guiding principle was to be inclusive toward people, perspectives and positions. The 'whole-of-university' approach was chosen to include not only students but also lecturers and administrative staff throughout the institution. To link research, educational and operational activities toward sustainability, a 'whole-of-university' approach was found to be effective to build trust among status groups as well as creating an identity as a university of sustainability (Brinkhurst et al. 2011; Mcmillin and Dyball 2009). Like successful initiatives on sustainability some elements of top-down and bottom-up approaches were mixed (Wiek et al. 2014). Following Kezar (2011) the project team used networks and created coalitions with other groups to strengthen bottom-up elements of institutional change, but also the support from the board committee of the university was actively sought. Having a key role as students the project team was able to cross boundaries of hierarchy and to engage in informal dialogues (Drupp et al. 2012). Additionally, inclusion prevents resistance to change: Feeling included and being an active part of the decision making process has been identified to be a key factor in change processes (McKay et al. 2013). Moreover, sustainability is a field with a high interdisciplinary potential (Leal Filho 2010). The vision of the project team for ESD involves all disciplines, since future problems are complex and cannot be solved by one discipline alone (Dale and Newman 2005; Blake et al. 2013). Therefore, the inclusion of as many people as possible representing a wide range of disciplines was desired to foster a dialogue without predefined results.

Müller-Christ (2014) suggests using the format of conferences because it is well established within the scientific community and allows reflecting on oneself and observing others. The aim should be to listen to each other and to start a constructive dialogue with stakeholders in politics and society. It is important that from watching and analysing changes the members of a university move on to transform their institution and inspire others to do the same (Müller-Christ 2014). In line with the principle of inclusion, the conference format of the event *Dies Oecologicus* includes key elements of bottom-up processes and has been found to substantially increase the acceptance of change within institutions. This is especially relevant for loosely coupled organisations in the sense of Hüther (2010). Since each discipline has its own patterns, meanings, knowledge tradition, and code of conduct (Frost and Jean 2003), interdisciplinary exchange and finding a common interdisciplinary way of thinking is necessary (Schäfer and Schnelle 1983). The event format meets these needs.

The project team early on managed to attract a small number of patrons that helped to identify and get in touch with key players relevant for the success of the project at all levels of the university. This network greatly facilitated the objective of making the project inclusive by allowing the project team to approach the different status groups of the university and to identify interview partners that formed an essential part of the grounding phase of the project.

3.2 Learning by Doing

Secondly, the principle of Learning by Doing was followed, in line with Aristotle, who once said

For those things which we must do after learning, we learn to do by frequently doing; as by building houses, we become house-builders, and by playing on the harp, harp-players; thus by doing just things we become just, by temperate things temperate, and by valiant things valiant.

Following Reese (2011) rather ‘trial and error’ was used instead of instruction, practical experience instead of book learning and doing instead of excessive theorisation. Moreover, learning by doing includes constant reflection. On the one hand, the teamwork including responsibilities, work capacities, occurring conflicts and future strategies was reflected. On the other hand, the development and learning of definitions, ideas, and concepts regarding sustainability was deliberated. Furthermore, the project team kept an open mind to internal and external opinions, ideas and recommendations. Also, learning by doing includes a high degree of flexibility to change involving team constellation, windows of opportunities and availability of support. In line with Drupp et al. (2012) student initiatives foster students’ learning as an independent knowledge acquisition on sustainability in a communicative environment.

3.3 Voluntariness and Grassroots Democracy

An important feature was the way the project team was formed and how it organised its work. Open membership guaranteed that all interested parties were able to participate and due to the grassroots democratic decision making were able to make their voice heard in the goal setting, implementation and evaluation of the project. Voluntariness ensured that no one had to do anything they did not like to do, which helped to keep up the high spirit that is essential for a student-led, unpaid project. The project team also assigned specific roles to individual team members that thereby became responsible for implementing a particular task or to represent the project team at specific occasions or functions. Taken together these organisational choices allowed the project to harness the mix of motivations and abilities of a team drawn together by a combination of personal and political sympathies. With the principle of voluntariness and grassroots democracy it was tried to reduce and deal with typical challenges of student initiatives and projects like high fluctuation of volunteers and a small number of participants (Drupp et al. 2012; Spira 2012).

In line with the project team's wish for a democratic dialogue inspiration was taken from the event "*Dies Academicus*", a day of discussing and reforming the curricula that is well established at universities throughout Germany.

3.4 Living Our Vision

Establishing a commonly agreed goal of the project, to work toward a more sustainable university, and sharing common values and the other guiding principles of inclusion, learning-by-doing as well as voluntariness and grassroots democracy has been pivotal in successfully completing the project. This common basis allowed solving the unavoidable internal and external conflicts generated by an ambitious project aiming for institutional change. Articulating a vision also turned out to be crucial in activating people and to motivate them to become a part of the change process (Boehm and Staples 2005) in contrast to people using sustainability as an empty shell. Moreover, the project team tried to work and live as sustainable as possible ("walk our talk"), e.g. by using recycling paper, separating waste, a green bank account etc.

4 Implementation

The idea for the project was created within a small interdisciplinary group of students. As a first step, financial support of 3800€ for travel expenses, equipment, flyers etc. was applied for and granted at a student initiative funding program at UHH. Early on the DESD acknowledged the event *Dies Oecologicus* as an individual contribution. The overall project surrounding the event *Dies Oecologicus* was divided into three phases: grounding, planning and realisation, and evaluation.

1. *Grounding*

In the first phase the common motivation and objective as well as what could be learned from other universities was identified and what the state of affairs was at our university. Starting from a group of four students that came up with the idea the first important step was to attract more members and to discuss and agree upon a common understanding of sustainability in general and the objectives and guiding principles of the project in particular. At that point the project team was neither familiar with the scientific discourse on sustainability in HEIs nor did it know much about sustainability definitions. The project team needed to focus the project and as explained above it was started with a focus on ecological aspects of sustainability. Different definitions were discussed and an agreed-upon definition was put down in writing. It was revised several times in the course of the project. At the end of the project it read:

Ecological sustainability requires dealing with nature in a respectful and long-sighted way and transferring this into one's own lifestyle. As a result, resources can only be used at a rate equal to their regenerative capacity or in non-destructive ways. This includes effects on both current and future generations. Ecological sustainability requires education. As a consequence, impulses to act both for individuals and for society as a whole are created. This is a process and not an outcome. Ecological sustainability is closely connected with social responsibility and economic sustainability. However, there are strict limits to the extent these different dimensions are to be traded off against each other in situations where they are in conflict.

Based on this definition the possible ways to implement SD in the university's curriculum as well as in everyone's daily life was discussed. Within regular courses sustainability could be covered by discussing different definitions of the concept, teaching and testing strategies to educate on sustainability, studying specific applications in real-world contexts, reflecting on personal habits and life-styles, investigating the causes of excessive resource use including historical examples and by highlighting the relevance of discipline specific theories and concepts for sustainability. Reading an existing student-prepared sustainability report for the UHH (oikos hamburg 2012) allowed identifying further change agents. The report also showed that the current transformation process was mainly top-down and lacking effort. The report also raised a number of questions that helped designing the questions to be asked in the interviews that formed a crucial part of the project. Furthermore, the project team cooperated with an interdisciplinary seminar called "Energy transition at universities in northern Germany" and learned more about the sociological and physical aspects of sustainability as well as decision making at universities.

Using the information acquired the questions for the interviews with different change agents were developed: students, academic and administrative staff working on sustainability. The interviews were conducted to establish the state of affairs on sustainability at the UHH. This included people involved in different board committees. The interviewees were identified by suggestions from experts and sustainability as well as reform process involvement. The interviews were more than

just tools to collect relevant information on perspectives, motivations and existing projects and reforms on SD. They also established a broad network of change agents that knew about the project, its objectives and to some extent started identifying themselves with it.

Based on experiences during the first set of interviews the questions were modified to include specific examples.

1. How would you define sustainability?
2. Do you do something for sustainability
 - as a person?
 - as part of your function within the university/institution?
3. If yes why and what? If no, why?
4. Can you identify and apply available knowledge related to sustainability within your own discipline according to universities' curriculum, daily lives of its members, and the governance and administration of the organisation itself?
5. Where do you see (a) possibilities and (b) necessities to act sustainably at universities?
 - Which decisions have to be made and by whom?
 - How can the different status groups at universities contribute to sustainable development?
6. Which change agents work on sustainability at universities?

In order to learn from change agents at other universities, the universities of Tübingen, Potsdam, Lüneburg, Bremen and Kiel, which are well known for working on sustainability throughout Germany, were selected for our external interviews. They were chosen, because each of them was interesting in several aspects, e.g. the university was recognized for excellence in research by a federal initiative (“Exzellenzinitiative”), examples of established courses on SD, successful student initiatives, eco-management-system, pilot projects. The universities of Bremen and Kiel were additionally analysed by Hackstedt and Walz (2014).

2. *Planning and Realisation*

Secondly, the results of these interviews were analysed and discussed. In order to get feedback and an external view on the data, results were presented in the seminar “Energy transition at universities in northern Germany”. Major topics that guided the planning of the event *Dies Oecologicus* were identified: The curriculum, the students and the institution itself. To start a whole institutional change it was decided to structure the workshop into different sessions (see Fig. 1). Teaching was covered by four separate sessions because it is a very complex topic and the main focus: (1) “Sustainability inflation? We need content!” about what content is

Dies Oecologicus

First Sessions

Sustainability inflation? We need content!
Ecologically sensitive, greener, resource friendly... What do you associate with sustainability? What topics are important and which do you want to cover in your curriculum? We want to fill the buzzword "sustainability" with proper content and make it palpable.

Courses - or: to what University would you come gladly?
Do you have ideas on new ways of teaching? Together, we will collect and develop sustainable, interdisciplinary and modern teaching concepts to foster the Studium Oecologicum idea.

Looking for a home - where to place sustainability?
Should sustainability be integrated into the curriculum? Or do we need a Studium Oecologicum as a separate course/certificate? We will work on ideas where and how to implement sustainability into teaching.

Your project?!
What do you want to improve at your university concerning sustainability? Get an overview on recent projects and support possibilities. Get to know each other and develop new ideas.

Second Sessions

Sustainably governing a university - can we reach the carbon neutral campus?
Less resource consumption, fewer emissions, more energy efficiency. We want to discuss how an eco-management system may help reducing the University's eco footprint.

Studium Oecologicum synthesis
You want to design the concept for a sustainable curriculum? We will collect and connect the results of today's sessions to work on the Studium Oecologicum programme.

Better together?
Discover common grounds with other projects and work on collaboration. Seize the chance to build networks for a sustainable commitment.

09:15 - 09:50 am
welcoming speeches
Prof. Dr. Alexander Bassen (KNU)
and Prof. Dr. Anita Engels (Co-Speaker, CISA)

First Sessions (10 - 12am)
Courses - Sustainability inflation? We need content! you come gladly? | Sustainability - Looking for a home - where to place sustainability? | Your project?!

12:15 - 13:45 am
market of initiatives
Introduction of initiatives and projects concerning sustainability

Second Sessions (2 - 4pm)
Studium Oecologicum synthesis | Sustainably governing a university - the carbon neutral campus? | Better together?

4:15 - 5:15pm
summary and closing sessions

Fig. 1 Structure of the event *Dies Oecologicus*

currently missing and what courses are needed. (2) “Courses—or: to what University would you come gladly?” about identifying adequate didactical methods. (3) “Looking for a home—where to place sustainability” about administrative

challenges in implementing sustainability in teaching and (4) “Studium Oecologicum synthesis” where the results of the other three sessions were combined. Following up on the results of Walz and Hackstedt (2014) on the institutional aspects, the session on a university’s ecological footprint and eco-management systems was created. It had the title (5) “Sustainably governing a university—can we reach the carbon neutral campus?” During the grounding it was found that student-led projects are often facilitators for institutional change as has been reported in the literature (e.g. Drupp et al. 2012). That is why the session (6) “Your project?!” gave space to develop new student-led projects and to collect ideas. The session (7) “Better together” focused on connecting existing projects because many interviewees talked about being alone.

Each session was supported by an internal and an external expert/change agent/stakeholder that the project team got to know during the grounding phase. They were chosen due to their scientific expertise and/or their function within the university. Moreover, a buffet of organic and fair trade food supported by a local society educating and advising on organic food was organised. Participants could have brunch while meeting others and exchanging ideas.

3. Summarising

The last phase of the project was dedicated to summarising main results. The minutes and products of all sessions were collected and more descriptions (and reflections) added to an evaluation booklet (Dies Oecologicus 2014), which was handed over to most of the internal interviewees. Based on the results of the project new steps, strategies and projects were planned.

5 Results and Discussion

It is quite difficult to define the outcome of the project, and even more difficult to measure the impact of the day on SD at the UHH. The results are therefore seen as part of the overall reform process, with the project team and the event *Dies Oecologicus* having been (major) players therein. The sessions produced more approaches and possible action points than can be named here. In what follows a number of recent developments are listed that at least to some extent were brought about by the event *Dies Oecologicus* and the change process it started.

5.1 Personal and Personnel Change

First of all, the project team gained new ideas on how to implement sustainability in the university’s curriculum, the daily lives of its members, and the governance and administration of the organisation itself.

The project team members became multipliers for their aims and principles: They attended the *2nd WSSD conference* September 2014 in Manchester, the

Conference of the network of sustainability initiatives October 2014 in Bochum and the *European Green Office Summit* October 2014 in Berlin. Also, the project team was invited to present their project and their specific issues at a national education conference organised by the *German Council for Sustainable Development*, November 2014, in Berlin.

Certainly one of the most important results is the establishment of a working group (“*Studium Oecologicum*”) as a follow-up project to implement SD in HEIs. The group consisting of students and lecturers develops new courses with topics related to sustainability and using new ways to teach, focused on education through scientific research in groups, e.g. problem-based or project-based learning. This illustrates how a student-to-university project transforms to a student-and-staff-project according to Spira (2012) and through that confirms the initial principle of inclusion.

Moreover, more people got involved and established their own working groups. This development represents a new form of connecting members groups and shows the effectiveness of boosting a movement by connecting existing players, adding new ones and being visible to the public. People involved in the event *Dies Oecologicus* and the project carried the ideas, especially on ESD, into their departments and spread them among friends and colleagues. This enlarged community is of course able to further create ideas, new projects and add momentum to the university’s transition process towards SD. Furthermore, sustainability was the topic of this semesters’ university-wide “*Dies Academicus*”. Hence, the project started as a bottom up movement and quickly received positive and supportive top down resonance.

5.2 Institutional Change

The project revealed some of UHH’s forgotten roots from the 80s and 90s and finally raised awareness for ESD and the need for a suitable governance structure, e.g. a coordination position. Moreover, a new university-wide funding scheme for student-led projects on SD was established. Funding student-led projects helps overcoming typical barriers to student engagement (Drupp et al. 2012; Spira 2012). Such projects increase quickly the number of people working on a topic and strengthen the bottom-up approach. Furthermore, students are now involved in a committee working on SD at UHH, and hopefully more participation is yet to come.

5.3 Regional Change

Due to intensive press coverage, the project has been highly recognized within the region. The project triggered several urban gardening and greening initiatives. Furthermore, currently developed courses on ESD will be open to all members of society.

Moreover, two students most active in organising the project were rewarded with a prize of the council of future development of Hamburg (Zukunftsrat Hamburg), a network for SD following Agenda 21.

6 Conclusion

The overall success of the event *Dies Oecologicus* is being the tipping point for sustainable development at the University of Hamburg. The event *Dies Oecologicus* has accomplished to build up a critical mass and momentum for the long and potentially burdensome process of implementation and integration into existing processes of institutional change.

The outline of the event *Dies Oecologicus* is transferable to other universities and this paper strongly suggests strengthening students' possibilities to participate in university's change process and encourages students to actively take part.

By following the principles of inclusion, learning by doing, voluntariness and grassroots democracy while living the vision of a sustainable university, the project team was able to take a first step into realizing this vision.

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