UNIVERSITY OF GOTHENBURG

Eco-labelling of courses and programs at University of Gothenburg

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Abstract

For several years, the University of Gothenburg has been classifying and eco-labelling its courses and programs according to the wide definition of sustainable development found in the Swedish Higher Education Act (Chapter 1, Section 5). The objective of this labelling, which corresponds to the ISO14024:2009 standard, is primarily to guide students in their selection of courses and programs. Two different eco-labels are used for courses and programs. Courses and programs that primarily or partly include issues related to ecological, economic or social sustainable development have different labels. The result shows that the proportion of courses and programs that are eco-labelled is increasing over the years and currently, approximately 30% of the courses and programs are eco-labelled.

Studies have shown that the eco-labelling of university courses and programs is still new and many university lecturers are uncomfortable with defining sustainable development within their subject area. University of Gothenburg has started a course to train university lecturers on how to use good examples, find good literature and through dialogue, get help on how sustainable development can be integrated into various subject areas.

Keywords

Education for Sustainable Development, ESD, Environmental Management System, Universities

1. Introduction

Identifying and labelling courses and programs according to their content of sustainable development (SD) is a demanding task for all universities involved in such a practice. In this paper we will introduce and describe the way it is done at the University of Gothenburg and then discuss our experiences in the light of other attempts done worldwide. Political agenda for working with Education for Sustainable Development (ESD) was first established in Agenda 21 (1992), chapter 36; promoting education, public awareness and training and later

on described in UNECE Strategy for Education for Sustainable development (2005) stating: “Education for sustainable development, develops and strengthens the capacity of individuals, groups, communities, organizations and countries to make judgments and choices in favor of sustainable development. It can promote a shift in people’s mindsets and in so doing enable them to make our world safer, healthier and more prosperous, thereby improving the quality of life. Education for sustainable development can provide critical reflection and greater awareness and empowerment so that new visions and concepts can be explored and new methods and tools developed.”

University of Gothenburg has an active Environmental Management System, EMS, certified by ISO 14001 and registered by the European Eco-management scheme, EMAS. The EMS includes objectives focusing on different activities of the university. The objective for education at the university is quoted as “The university shall integrate sustainable development in the education” (University of Gothenburg, 2005). From early 2005, the implementation and follow up of this educational objective has evolved into the eco-labelling system of today. Initially this objective was reported as a good example of how a number of departments integrated SD in their teaching practices. During the next step in early 2006, the university had a small group of staff evaluating all courses, based on the course descriptions in the course catalogue and identifying courses that contained SD. Concurrently, a discussion was taking place regarding the possibility of letting the course leaders do this evaluation themselves. Course leaders are staff members responsible for offering courses and thus are familiar with the contents of the courses. As a result of the discussions, an eco-label position was introduced into the university database of courses and programs (GUBAS) from the academic year 2006/2007. GUBAS is used as a basis for producing both the printed version of a course and program catalogue as well as presenting them on the web. Courses and programs are classified according to their content of SD; mainly, partly or not at all, dealing with questions of SD. When the departments entered the information regarding the courses to be offered in the academic year 2006/2007 into GUBAS, they were given a question about eco-labelling, on the two levels The definition of SD as expressed in the Swedish Higher Education Act (2010, Chapter 1, Section 5), " In the course of their operations, higher education institution shall promote sustainable development that ensures present and future generations a healthy and good environment, economic and social welfare and justice" was used as a basis for the classification. It is worth mentioning that the education at University of Gothenburg is based on Bachelors and Masters programs comprised of different courses, in contrast to universities where the content of a program is based on a syllabus and not necessarily on separate courses.”

The result of this classification and eco-labelling, as seen in the course and program catalogue and on the course and program web site is not based on a fully independent auditing of the eco-labelling, since it is an in-house product. The intention is to determine the current status of courses and programs containing SD, but it also makes it possible for students to use the eco-labelling as a decision parameter when applying for courses and programs.

2. Definition and classification

At the inception of the eco-labelling process, there was a discussion regarding the definitions of Education for Sustainable Development (ESD) as well as Sustainable Development (SD). ESD discussions were based on the UN Decade of Education for Sustainable Development (Decade). During the initial discussions, focus was mainly on defining SD. Examples of questions that were addressed included; if SD should be defined centrally for the whole university or if it should be defined by each faculty, department or subject. The discussion led to a broad definition at central university level and a possibility of making a more distinct definition on faculty, departmental or subject level. The definition in the Higher Education Act (Swedish Higher Education Act, 2010) was used as basis for the broad university definition. We have chosen this definition of SD, even if its development is towards something, because it is the commonly used definition in Sweden and is also defined in the Higher Education Act. In our discussions with lecturers, we also emphasise this as a development towards a sustainable society.

Not only was the definition of SD discussed, but also the content of SD in each course or program. A central part of the discussions was the interpretation of the wider term “environment and sustainable development”. This term stems from the previous use of the more narrow term environmental science or environmental education. This discussion was necessary since many lecturers in science do not always consider their teaching on a course or program to involve SD, but rather focus on the environmental development. On the other hand, lecturers in social science and economics do not find the environmental part of SD a natural part of their courses and programs. The discussions ended by defining three different criteria for classification of programs and courses by framing questions within environment and sustainable development. The criteria are:

Criterion I: a course or program where more than 50 % of the content deals with the environment and sustainable development.

Criterion II: a course or program where less than 50 %, but more than 0 %, of the content deals with the environment and sustainable development.

Criterion III: a course or program that does not at all deal with the environment and sustainable development.

The courses and programs meeting criterion III, and do not pose questions on SD, are not eco-labelled at all.

As mentioned in the introduction, University of Gothenburg now uses the above criteria for classification when all relevant information on courses and programs is fed into the database for the following academic year. This means that for every course or program entered into the database, a question about eco-labelling is posed to the person entering the information. That person has to mark the courses and programs according to the three criteria in a two-step process. If the course or program is initially marked as at least to some extent dealing with environment and sustainable development, a second question appears asking if the degree of environment and sustainable development in the course or program is covered by more or less than 50% of the content. In this way, the three classification criteria outlined above are met.

The courses being classified and eco-labelled are those offered as standalone, free courses and not tied to a specific educational program. In Swedish universities, the students are expected to study according to a program, or they can take free courses where they can combine courses from different subjects according to their interest. Studying free courses can result in an individual Bachelors and/or Masters certification or can just be taken for personal development.

3. Eco-labelling symbols

The eco-labelling of higher education at University of Gothenburg corresponds to principles in the ISO 14024:2009 standard. In the life cycle consideration we look on the student's active working period after the education and the major impact knowledge on sustainable development will have on this. The symbol used for labelling courses and programs according to criteria I and II in the catalogue and on the web site has been discussed since it was first introduced and the department of student affairs (2010) presented an initial suggestion. The classification and eco-labelling symbols are valid for one academic year. The first symbol was similar to one used by Metro newspaper to identify and market their newspaper. Due to criticism regarding the similarities between the two symbols, the first symbol was changed to one that was unique for eco-labelling at University of Gothenburg. The current symbols for the two criteria are shown in figure 1. In the university catalogue and on the education description site, the eco-labelling is expressed as a part of the Environmental Management System for the University, to meet the goal of increasing the level of education in SD. At the same time, it acts as a label for students who want to include

more SD in their education. Students and lecturers have criticised the symbol, with the clover and the green colour, for emphasising natural science and environmental education rather than SD. New symbols that better represents SD are therefore being introduced for the academic year 2012/2013, figure 2.

4. Results of the eco-labelling

The results for the eco-labelling of the courses and programs between the academic year 2006/2007 and 2010/2011 show that between 7.5 and 9.7 % of the programs and between 6.8 and 8.2 % of the courses were marked according to eco-label Criterion I. Between 15.0 and 36.8 % of the programs and 16.0 and 22.4 % of the courses reached Criterion II, Table 1. There are fluctuations in the number of eco-labelled courses and programs between the years. No clear trend for courses and programs labelled according to criterion I can be seen, while the trend is positive for criterion II programs. Criterion II courses had its maximum percentage in 2008/2009. Based in these trends a discussion regarding the reliability of the university eco-labelling system has emerged. Most of the fluctuations can be explained by an ongoing discussion of ESD and SD between staff at the different departments, at the Centre for Environment and Sustainability (GMV) and staff responsible for the internal EMS auditing. If for instant all courses from one department are eco-labelled in any given academic year, this results in a discussion with the director of studies in that department. It may well be so that the outcome of the discussion is that the number of eco-labelled courses will be decreasing in the subsequent year since their definition of the term environment and sustainable development might have been unreasonable. In other cases it may be the other way round. No courses are eco-labelled. This also results in a discussion among the parties mentioned above. This type of continuous discussion is one good way of spreading the knowledge and understanding of ESD and SD in different academic subjects, as underlined by Broman et al. (2002) and Lozano (2006). One reason for a relative low number of reported eco-labelled courses can be attributed to the constant time constrain under which most administrative academic work is done. If the number of courses to be entered into the GUBAS database is large and deadline is approaching it becomes easy to save some time by answering ‘No’ to the first question if environment or sustainable development is included in the course. As a first step to solve this problem a discussion was initiated with the directors of studies in the departments to inform them about their responsibility to provide the administrative staff with the proper information for correct classification and eco-labelling. How the problem of missed classification due to overworked staff can be avoided is an interesting part of the future discussions regarding the classification and eco-labelling of courses and programs.

Table. 1. Results from eco-labelling of programs and courses at University of Gothenburg. To avoid counting courses twice only courses offered as standalone courses (see chapter 2) are included in the table. The relative fluctuations seen in the table are largely a result of a continuous discussion of ESD at the university.

Year\Criterion	I	II	III	Total
Program 2010/2011 (%)	10 (7.5)	49 (36.8)	74 (55.7)	133
Program 2009/2010 (%)	11 (8.2)	32 (23.9)	91 (67.9)	134
Program 2008/2009 (%)	18 (8.5)	45 (21.1)	150 (70.4)	213
Program 2007/2008 (%)	16 (7.5)	32 (15.0)	166 (77.5)	214
Program 2006/2007 (%)	12 (9.7)	26 (21.0)	86 (69.3)	124
Course 2010/2011 (%)	149 (7.0)	389 (18.2)	1601 (74.8)	2139
Course 2009/2010 (%)	145 (6.8)	409 (19.2)	1573 (74.0)	2127
Course 2008/2009 (%)	151 (6.9)	490 (22.4)	1548 (70.7)	2189
Course 2007/2008 (%)	105 (8.2)	224 (17.4)	958 (74.4)	1287
Course 2006/2007 (%)	103 (7.6)	215 (16.0)	1028 (76.4)	1346

The above results can be split into result per faculty, exemplified in Table 2. The education at University of Gothenburg is offered by eight faculties and one Board of Teacher Education, which acquires the Teacher Education courses from departments at the eight Faculties.

The faculties decide on the number and focus on courses and programs provided. Some faculties have a majority of their students in programs while a majority of students in other faculties take courses without following a program. The courses vary between 5 and 30 hec (higher education credits, compatible with ECTS credits). The programs are normally organised as Bachelors and/or Masters programs, 180 and 120 hec, respectively.

Table. 2. Eco-labelled and non eco-labelled courses and programs at University of Gothenburg in percentage of the total number of courses or programs at the faculty. For clarity eco-labelling according to criteria I and II have been added. To avoid counting courses twice only courses offered as free courses (see chapter 2) are included in the table.

Faculty\Criterion	I + II courses	III courses	I + II programs	III programs
Sahlgrenska Academy (Medicine, Odontology and Health and Care Sciences)	13%	87%	77%	23%
Faculty of Science	43%	57%	79%	21%
Faculty of Art	18%	82%	42%	58%
Faculty of Fine Applied and Performing Arts	0%	100%	10%	90%
Faculty of Social Sciences	50%	50%	23%	77%
School of Business, Economics and Law	32%	68%	27%	73%
Faculty of Education	15%	85%	0%	100%
IT Faculty	11%	89%	0%	100%

Taken from the university course and program catalogue 2011/2012

Table 2 shows the large variation between the faculties regarding eco-labelling of courses and programs that exist. It can be seen that the eco-labelling of courses and programs do not match. While Faculty of Science has the higher percentage of eco-labelled programs, only 43% of their courses are eco-labelled. Faculty of Social Sciences have 50% of their courses eco-labelled but less than a quarter of their programs are eco-labelled. Many factors are responsible for this variation. From the fluctuating trends seen in Table 1, it is understandable that it is an ongoing, dynamic process to incorporate SD in the courses and programs, and this is a process that takes time (Broman, 2002; Davidson, 2010; Lozano, 2006). The bottom up approach used here, where the eco-labelling is relying on individual lecturers is slow but we believe it is efficient. The engaged lecturers inspire others and the resistance to change it minimized (Lozano, 2006). This bottom up approach is also used by, for example Chalmers University of technology, Gothenburg, Sweden, as a more efficient way of incorporating SD into their curricula. We also see in Table 2 that the faculties where we know there are a high number of engaged lecturers have the highest number of eco-labelled courses. At these faculties the champions and early adopters of SD among the lecturers (Lozano, 2006) have had an impact. When it comes to programs, the decision is no longer made by individual lecturers but by a faculty or departmental board or director of studies, and thus the outcome is different.

5. Evaluating the classification system

Since we still consider the eco-labelling to be in a development stage, no explicit auditing of the classification system has been performed. A student evaluation in 2008 (Lagrell, 2008) showed that approximately 14 % of the students know about the eco-labelling system at the university and 10.8 % said that they had used the eco-labelling system when they decided on which course or program to apply for.

In a Bachelor thesis by Lagrell (2009) the students at the university were asked on how familiar they were to the concept of SD. 38.7 % responded that they know the concept very well, and 77.9 % answered that they know it well or very well. This result shows that the students might feel more confident with the concept of SD than many of the lecturers at the university. On one hand, this underlines the need for training of university lecturers in the concept of SD and ESD. On the other hand, this may reflect the difference in confidence regarding SD based on the degree to which you are aware of the complexity of sustainability.

Forsman (2009) made a qualitative study to analyze the approach and application of sustainable development among researchers within six different research fields at the University of Gothenburg. Two research fields were selected from each of the following:

faculty of science, faculty of social sciences and school of economics. The aim of the study was to establish a set of keywords describing SD. Those keywords should be used for bibliometric determination of number of publications and dissertations from University of Gothenburg within SD. It was also used as a set of keywords used for classification and eco-labelling of courses and programs. The outcome of the study demonstrates the complexity of sustainable development, also reported by Lagrell (2009), as researchers in the investigated research fields all relate to sustainable development in different ways. Since most researchers in the research also teach, it is plausible to assume that these differences also influence their approach to sustainable development in their teaching practice. Despite the individual attitudes of the researchers, four categories of research could be identified. The first category consists of the *holistic* approach, e.g. those fields that concern all of the important aspects that are presented in the analytical framework. The *obvious* approach is used by researchers who explicitly employ the concept of SD in their publications. The *one-dimensional* approach is used by those who relate to SD in their own way or opinion but in the publications only relates to one of the dimensions of SD. The *invisible* approach is employed by are those who relate to SD vaguely and do not explicitly employ the concept of SD in their publications.

These results reflects the difficulty of having a common, detailed, definition of SD in a large university, like University of Gothenburg, with eight faculties having very diverse research fields. We believe that part of the problem is connected to the paradigm of practise what you preach. We all give different values to the concepts on which SD is built. Sometimes this results in an internal conflict among individual lecturers who end up with a feeling of not practising what is being preached. Conflicts like these are not beneficial to the integration of SD in the education, but must be resolved (Lozano, 2006; Mulder, 2010).

In Forsman's study the eco-label marking of courses and programs was repeatedly addressed during the discussions of the definition of SD. There are lecturers who still believe that they can not eco-label courses and programs using the poor definition that the university provides. The need for teacher training in ESD has thereby been manifested here, as elsewhere in (Broman et al., 2002; Davidson, 2010). This problem is elaborated in the following section.

6. Staff training in sustainable development

In 2009 the Centre of Environment and Sustainability (GMV) initiated a series of training courses in SD and ESD for academic staff at the university. These courses are offered every semester. The aim of the courses was to raise the awareness of the concept of SD among the lecturers, to give good examples on how the teaching could be carried out and finally

how SD goals could be implemented in the course and program curricula. This was seen as important since knowledge about and understanding of SD is a central component of the workplace values for all university employees according to the University's strategic plan.

Based on the output of Forsman's study (2009) the initial question to be discussed during the teacher training was: What does SD stand for in your opinion? This initial question and the resulting discussion was used to explain and exemplify the diversity of the SD concept among the course participants since it has a different meaning in different situations, in different subject areas and among the lecturers. Following the initial discussions, the participants took part in three different case study examples on environmental, economic and social dilemmas concerning SD. The actual discussion was the outcome of the process, not the answers of the questions relating to each case study. The case studies and the discussions relating to ESD illustrates that lecturers often fragment the problems into smaller parts during their teaching, to make it more understandable to the students, but after the fragmentation they are seldom able to return to the bigger and more complex discussion. The hindrance to going from the parts to a more holistic view of the case seems to be substantial. A solution to this dilemma could be to take longer on the bigger and more complex question or case before looking at the different parts. This problem of drivers and barriers is also discussed by Holmberg & Samuelsson (2006) where similar findings are expressed and a systematic way of dealing with the barriers is described by Lozano (2006). In the Gothenburg Recommendations on Education for Sustainable Development (2009) one could find this expressed as "Learning for change based on relating multiple perspectives to each other at all times".

Next step in the staff training course is for the participants, together with the instructors, to look at the current course content of selected courses and provide suggestions on how to introduce SD content in their course. In this way, the participants need to reflect on the meaning of SD from their own perspective and – hopefully – after the training course they will be better at including and discussing SD in their courses with the goal that the expected outcome also improves the eco-labelling of courses.

However, after this step we still had participants with doubts about ESD and SD in their subject. To further illustrate the complexity but also the possibilities of ESD and SD the participants are engaged in a discussion with experienced researchers in the fields of ESD and SD. Dr. Lundholm from Stockholm Resilience Centre was the first invited motivational speaker and she gave her view on Learning for Sustainable Development, from the book Environmental Learning by Rickinson et al. (2010). The discussions were based on her rich insights into the complexities and dynamics of students' environmental learning. From her point of view ESD can be based on the following elements:

- Change management,
- Learning and teaching SD
- Students and learning experiences,
- Feelings and values, relevance, different approaches between students and lecturers.

During the final part of the staff training course the question was raised on how to get goals on SD into the course and programme curricula. Here we had people who had been involved in curricula rewriting at the university giving experienced insights of the process, success stories and some examples where it did not work out. In the discussions several ideas on curricula goals were given and scrutinized.

An example of how SD can be incorporated in teaching a university course is taken from one of the courses on the first semester at teacher education program. Here both the concept of SD and ESD has been included in the syllabus of this mandatory course. The course has been taken by approximately 1,000 students each year since 2003, with a positive result. The positive result is reflected in the course evaluation and in the study by Lagrell (2008) where the students on the teacher training program had an outstandingly high score related to the concept of SD. In this teacher training course, students work on a multimodal slide show - a “start key” - which is aimed at their prospective pupils. In this way, students must first get acquainted with their own and others’ understanding of SD, and try to transfer this knowledge to a school field or subject which should be their professional field of work. This teacher training course was described in detail and discussed in the article “Education for sustainable development on the teacher training program at the University of Gothenburg” presented at the Environmental Management for Sustainable Universities (EMSU) conference in Delft, the Netherlands, October 2010 (Boman et al., 2010). In this teacher training course as well as in the university staff course the idea is to get the participants engaged by letting them work with a subject of their choice, and show that it is possible to combine any subject area with SD and ESD. The same phenomena have been reported in other studies, for example by Broman et al. (2006) and Davidson et al. (2010). The staff course is followed by only a handful of lecturers each semester, but it will be expanded and we are convinced it will have a positive influence not only on the implementation of SD in the courses and programs but also lead to a better eco-labelling of courses and program.

7. Discussion, concluding remarks and future perspectives

The Swedish Higher Education Act (2010) has been used as a basis for implementing sustainable development at other Swedish universities as well (Axelsson et al., 2008).

Compared to University of Gothenburg the work at the universities in Lund and Malmö was extended to include regions such as Skåne by creating the Regional Centre of Expertise (RCE) Skåne. The extension into RCE Skåne led to long discussions where the main question initially was “What’s in it for us?” The outcome of the process leading to the creation of RCE Skåne was a strong organisation that has proved successful in attracting interest among many stakeholders and thus also funding for ESD. In both Lozano et al. (2006) and Davidson et al. (2010) the inclusion of stakeholders outside the academia is pointed out as necessary for successful integration of SD in the universities. In Gothenburg there is a strong organisation in the form of the Centre for Environment and Sustainability (GMV) where support for the ESD process can be found. In both cases, the importance of a strong cooperative environment proved important for the development of ESD and in Gothenburg as well, for the eco-labelling of courses and programs. The question “What’s in it for us?” is important from another point of view as well. In Swedish universities, the lecturers have little time to spare for other duties other than teaching, such as research and performing compulsory administrative duties. The same issue is mentioned as a barrier by Lozano (2006). There is a personal barrier to overcome before the lecturer sees the value in spending time on learning how to incorporate SD into courses, if the personal outcome is limited. Once that barrier has been overcome, the final step to successfully achieve eco-labelling of the courses is usually small. GMV, as a strong SD partner, tries to convince the directors of studies at the department to give enough time for staff to go through the process of implementing SD into their courses.

In an evaluation of ESD in German universities, Henze (2000) looked for good practice examples and the availability of eco-auditing in the universities. When the good practice examples proved successful, they were based on an interdisciplinary and global learning approach in which the reflective and communicative competence skills was also taught. From this we can conclude that the staff training course at University of Gothenburg fits well into the scope of successful output of such a project.

According to the latest assessment of the courses and programs at University of Gothenburg a third of courses and programs deal with environment and sustainable development while two thirds do not. This cannot be a satisfying situation and one way to meet this is to offer teacher training courses for the university staff. The conclusion after offering the teacher training course every semester since 2009 is that training sessions like these ones have to be offered on a regular basis so as to make at least one teacher in every subject/research field aware of and familiar with the possibilities of integrating SD into their own teaching.

To facilitate the implementation of SD in the courses and programs of the university, a more systematic approach is needed. The current staff training course is probably not efficient

enough, despite the increase in eco-labelled programs. By a more systematic use of an assessment and development tool like the AISHE tool (Roorda, 2010) and the descriptors of indicators for ESD (UNECE, 2009) the implementation of SD in the university education system can be accelerated. The increased inclusion of SD in the education is also the goal of the eco-labelling system in use at University of Gothenburg. For universities not yet working with eco-labelling of their courses and programs, the experiences and development from University of Gothenburg can be used for an implantation of more SD in their courses and programs.

References

Agenda 21; adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janerio, Brazil, 3 to 14 June 1992. http://www.un.org/esa/dsd/agenda21/index.shtml

Axelsson, H., Sonesson, K. and Wickenberg, P., 2008. Why and how do universities work for sustainability in higher education? International Journal of Sustainability in Higher Education, 9: 469-478.

Boman, J., Olsson, M. and Andersson, U., Education for sustainable development on the teacher training program at the University of Gothenburg. Presented at the 2010 ERSCP-EMSU Conference, Delft, The Netherlands, 25 – 29 October 2010.

Broman, G., Byggeth, S. and Robért, K.-H., 2006. Integrating environmental aspects in engineering education. International Journal of Engineering Education, 18: 717-724

Decade of Education for Sustainable Development (DESD) (2005-2014), http://www.unesco.org/education/desd

Davidson, C.I., Hendrickson, C.T., Matthews, H.S., Bridges, M.W., Allen, D.T., Murhy, C.F., Allenby, B.R., Crittenden, J.C. and Austin, S. 2010. Preparing future engineers for challenges of the 21st century: Sustainable development. Journal of cleaner production, 18: 698-701

Department of Student Affairs, 2010. “What are you up to right now? Courses & programs 2010-2011”, University of Gothenburg, (Original Swedish title: ”Vad gör du just nu? Kurser & Program 2010-2011”)

Forsman, A., 2009, The holistic, obvious, one-dimensional and invisible. A qualitative study of sustainable development as object for research at University of Gothenburg. Master Thesis in Human Ecology, School of Global Studies, University of Gothenburg. (Original Swedish title: De holistiska, uppenbara, endimensionella och osynliga, En kvalitativ undersökning av hållbar utveckling som föremål för forskning vid Göteborgs universitet)

The Gothenburg Recommendations on Education for Sustainable Development, Centre for Environment and Sustainability (GMV), 2009, https://document.chalmers.se/download?docid=1751511759

Henze, C., 2000. "Sustainability in teacher training courses in a sample of German universities." International Journal of Sustainability in Higher Education **1**(3): 280-289.

Holmberg, J. and Samuelsson, B., 2006. Drivers and Barriers for Implementing Learning for Sustainable Development in Higher Education, UNESCO Education Sector, Technical Paper No 3, http://unesdoc.unesco.org/images/0014/001484/148466E.pdf

Lagrell, E., 2008. Labelling of courses. Evaluation of eco-labelling of courses and programs at University of Gothenburg. Project in the course practical environmental studies. University of Gothenburg. (Original Swedish title: Kursmärkning, Utvärdering av märkning av kurser och program vid Göteborgs universitet efter inslag av miljö och hållbar utveckling,)

Lagrell, E., 2009, Learning for life. A study of students' understanding, expectations and attitudes to sustainable development, at University of Gothenburg. Bachelor thesis in Human Ecology, School of Global Studies, University of Gothenburg. (Original Swedish title: Att lära för livet, En studie om förståelse, föreställningar och attityder i förhållande till hållbar utveckling bland studenter vid Göteborgs universitet)

Lozano, R., 2006. Incorporation and institutionalization of SD into universities: breaking through barriers to change. Journal of Cleaner Production, 14: 787-796.

Mulder, K.F. 2009. Don't preach. Practice! Value laden statements in academic sustainable education. International Journal of Sustainability in Higher Education. 11: 74-85.

Rickinson, M., Lundholm, C., Hopwood, N., 2010. Environmental Learning, Insights from research into the student experience, Springer, Berlin.

Roorda, N., 2010. Sailing on the winds of change. The Odyssey to Sustainability of the Universities of Applied Sciences in the Netherlands. Ph.D. thesis. Universitaire Pers Maastricht, ISBN 978 90 5278 980 4.

The Swedish Higher Education Act, Updated November 2010, http://www.hsv.se/lawsandregulations/theswedishhighereducationact.4.5161b99123700c42b07ffe3956.html

UNECE, 2009. Learning from each other. The UNECE strategy for education for sustainable development. UN, New York and Geneva.

University of Gothenburg, Sustainability Report 2009, 2010, http://www.mls.adm.gu.se/sustainability/

Eco-labelling of courses and programs at University of Gothenburg

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Figure caption

Figure 1. The eco-labelling symbols at the University of Gothenburg. The filled symbol labels courses and program fulfilling Criterion I and the bordered, whiter symbol labels Criterion II.

Figure 2. The new eco-labelling symbols at the University of Gothenburg. The filled symbol labels courses and program fulfilling Criterion I and the bordered, whiter symbol labels Criterion II.

Figure 1:

Figure 2: