



LUND UNIVERSITY

Master's Programme in Environmental Studies and Sustainability Science LUMES

Inclusion of Sustainable Development into education at Lund University Awareness and Willingness to change

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Abstract

This thesis is to study the process of implementing sustainable development into education at some international master programmes at Lund University. Heads of programmes and students, key agents of change, are considered as the main actors in this process. Therefore, a qualitative research approach, using interviews for academic directors, is used to assess what the current situations regarding the process of inclusion of sustainable development into education at some programmes are, how far those programmes have gone in this process, what the academic directors perceive to be the most important difficulties, and how such difficulties can be overcome or reduced. A survey and in-depth interviews are used for students to assess what the current attitudes towards sustainability are, whether they are willing to change, and how they would like to make change in their programmes.

Key words: sustainable development, sustainability, higher education, education for sustainable development, Lund University

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List of Abbreviations

LU: Lund University
SD: Sustainable Development
ESD: Education for Sustainable Development

1 Introduction

In recent years, there has been a lot of discussion on higher educational institutions role in the process of education for sustainability and promote sustainable development in the society.

In the United Nation's Agenda 21 of action plans came from the international conference on the environment in Rio 1992, it was stated that sustainable development should contain three environment, society and economy aspects, and:

Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues.

It is critical for achieving environmental and ethical awareness, values and attitudes, skills and behavior consistent with sustainable development and for effective public participation in decision-making
(UNCED, 1992:2 cited by Sandell et al., 2003:192)

In December 2002, the United Nations General Assembly accepted a declaration "Decade of Education for Sustainable Development" from 1st January 2005 till December 2014. Countries are encouraged to adopt the declaration and develop their own initiatives to move towards education for sustainable development (Lidgren, 2004:3).

Since then, many countries and universities around the world have developed initiatives to move forwards to Education for Sustainable Development. The Higher Education Funding Council for England (HEFCE), the major sponsor of higher education in England has committed:

Within the next 10 years, the higher education sector in England will be recognized as a major contributor to society's efforts to achieve sustainability, through the skills and knowledge that its graduates learn and put into practice and through its own strategies and operations.
(Martin et al., 2006:61)

The Technical University of Catalonia, Barcelona, has stated its contribution to sustainable development:

By 2015, the Technical University of Catalonia will become a technological point of reference in sustainable development at the regional, national, European and global levels, as a result of its contribution to education, research, development and innovation. This will be achieved by defining an effective, cooperative, long-term strategy drawn up by the University and its stakeholders.
(Ferrer-Balas et al., 2006:23)

In Sweden, at a conference for sustainable education in Gothenburg in May, 2004, Göran Persson, the Swedish prime minister stated:

The government in Sweden has appointed a committee to come up with proposals as to how sustainable development should be given a stronger role in our country's education system. I would like to state here and now that the time is ripe to include sustainable development in the Swedish Higher Education Act.

(Lidgren, 2004:3)

On the 1st February 2006 an amendment to the Higher Education Act (SFS 1992:1434) was made according to which universities in their activities shall promote sustainable development, which means that present and future generations are assured a healthy and good environment, economic and social welfare and justice¹.

At Lund University, the Higher Education Act and Lund University's strategic plan constitutes the basis for Lund University Environmental and Sustainable Development Policy, which states that:

Lund University plays an important role in society as a catalyst for sustainable development. Through education, research and cooperation with the surrounding community, the University shall provide reliable knowledge now and in the future.

While at Lund University, students shall gain insight and understanding of aspects of sustainable development relevant to their disciplines. This will enable students to become pioneers in the practical effort of their professional lives to attain sustainable development.

(Lund University Environmental and Sustainable Development Policy)

The new policy in Lund University has been launched. Purportedly educational programmes and courses should be prepared now to change and adapt to this policy. However, it is possible to motivate people who are open to change; for example people who are involved into innovation, research and projects are more susceptible to changes; rather than those who are more adamant to accepting any change (Ferrer-Balas et al., 2006:27).

Objectives

This very thesis is designed to explore the current attitudes and awareness towards sustainability among students at Lund University (LU), whether they are willing to accommodate any change in their programme, and how they would prefer to learn about sustainable development (SD). The thesis is also to study current situations at some programmes regarding inclusion of SD, willingness to change among academic directors,

¹ This information was obtained from an email to Mr. Mats Djurberg, Secretariat for International Affairs, Ministry of Education and Research, Sweden on 28 March 2007

barriers to make change, and how such barriers can be overcome or reduced. The purpose of this study is to provide initial information on the current situation towards education for sustainable development (ESD), and barriers towards incorporating SD into education. This initial information can be used in order to consider the possible directions for the process of incorporation SD into education at LU.

Research questions

In order to fulfill the above objectives, following research questions are formed and will be answered:

For students

What are students' attitudes towards sustainability?

What is the current understanding of sustainable development among students?

Are students willing to include sustainable development knowledge into their programme?

How do students prefer to learn about sustainable development?

For heads of programmes

What is the current awareness of the new policy among heads of programmes?

How far have programmes reached in the inclusion of SD into education?

Are heads of programmes willing to make change at their programmes?

What are considered to be the most important barriers by heads of programmes?

How could such barriers be reduced or overcome?

Hypotheses

In order answer some of the research questions above, several hypotheses are formulated at the beginning

For students

H1: Students do not strongly support sustainability

H2: Students do not understand the whole meaning of SD

H3: Students are not willing to include SD knowledge into their programme

For heads of programmes

H4: All of heads of programmes know very well about the new policy

H5: All of programme heads are willing to include SD into their programme

Scope and limitations

International master programmes only: In this thesis, only international master programmes at LU are studied.

Dimensions of a university

All universities have the same basic system with four dimensions: education, research, university operations, and external community. All dimensions of the system are crucial to the success of making change which only happens when these dimensions are connected to each other (see Figure 1-1) (Cortese, 2003:17&18). Therefore, all four dimensions and their interactions have impacts on the process of moving forwards to ESD. However, in this thesis, only “education” dimension will be studied. Research, university operations, and external community will not be considered.

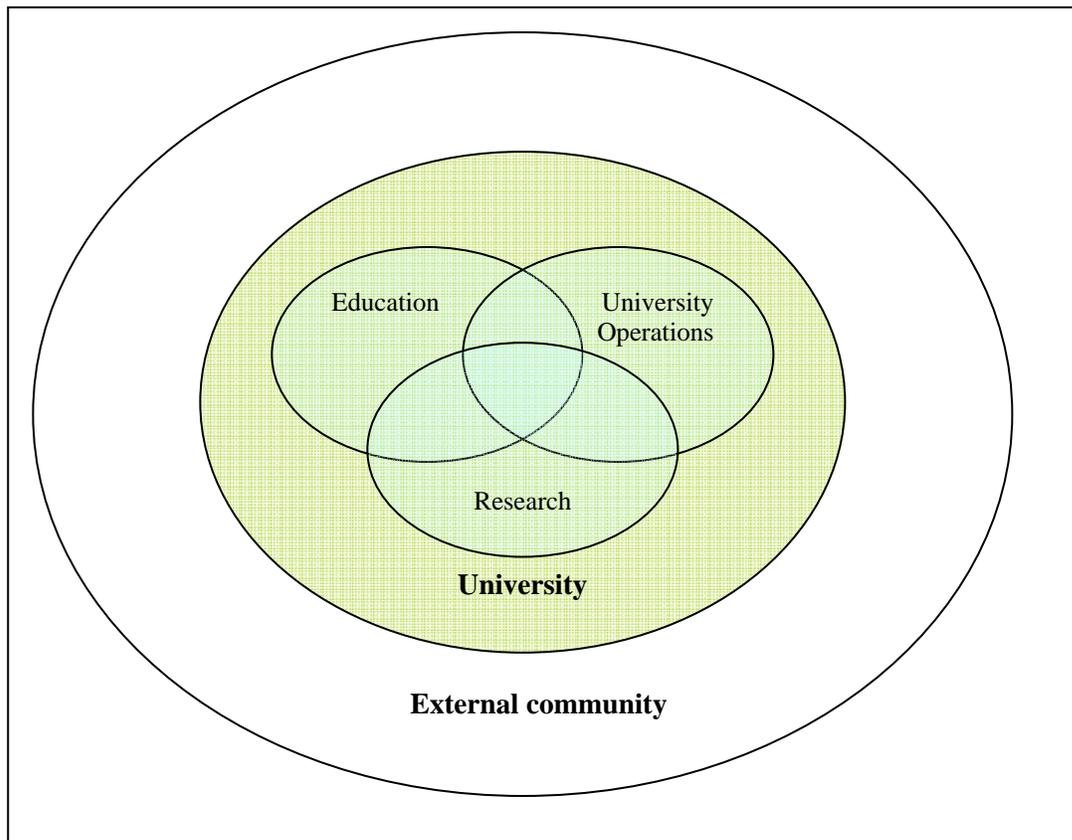


Figure 1-1 Fully integrated system of higher education

Source: modified from Cortese, 2003:18

Main stakeholders at a university

Main stakeholders at a university are academic directors, professors, and students (Lozano, 2006: 788), who are directly influenced by the environmental and sustainable

development policy and can influence the success of the policy. In this thesis, because of limitations of time, study will be carried out among the academic directors and the students only, the “professors” will not be considered.

Students’ preferences and previous experiences

One part of the thesis is to study students’ preferences towards learning for SD. To ensure that education will be appreciated by students and beneficial to them, the choices of content and teaching methods should consider students’ opinions and preferences (Sandell et al., 2003:232). This is an important part in the whole model suggested by Sandell et al. (2003) in order to achieve objectives of ESD (See Figure 1-2). In this model, education goals, teaching goals, choices of content and choices of forms and methods are decided by academic directors and teachers. These decisions are based on their preference to a particular educational philosophy as well as their views on sustainability issues. However, opinions of students are important too in the process of deciding content, methods and forms of teaching and learning approaches.

Another important point is that students’ previous knowledge and experiences are also worth to take into account when talking about choices of content and choices of teaching methods. If students’ preferences and previous experiences are not highly valued, there is a risk that what they learn at school will not be put into practice (Sandell et al., 2003:232). This is very important when talking about international master programmes at LU because students are from many countries and backgrounds. However, because of its complexity, this thesis will study students’ preferences only. Students’ previous knowledge and experiences will not be examined.

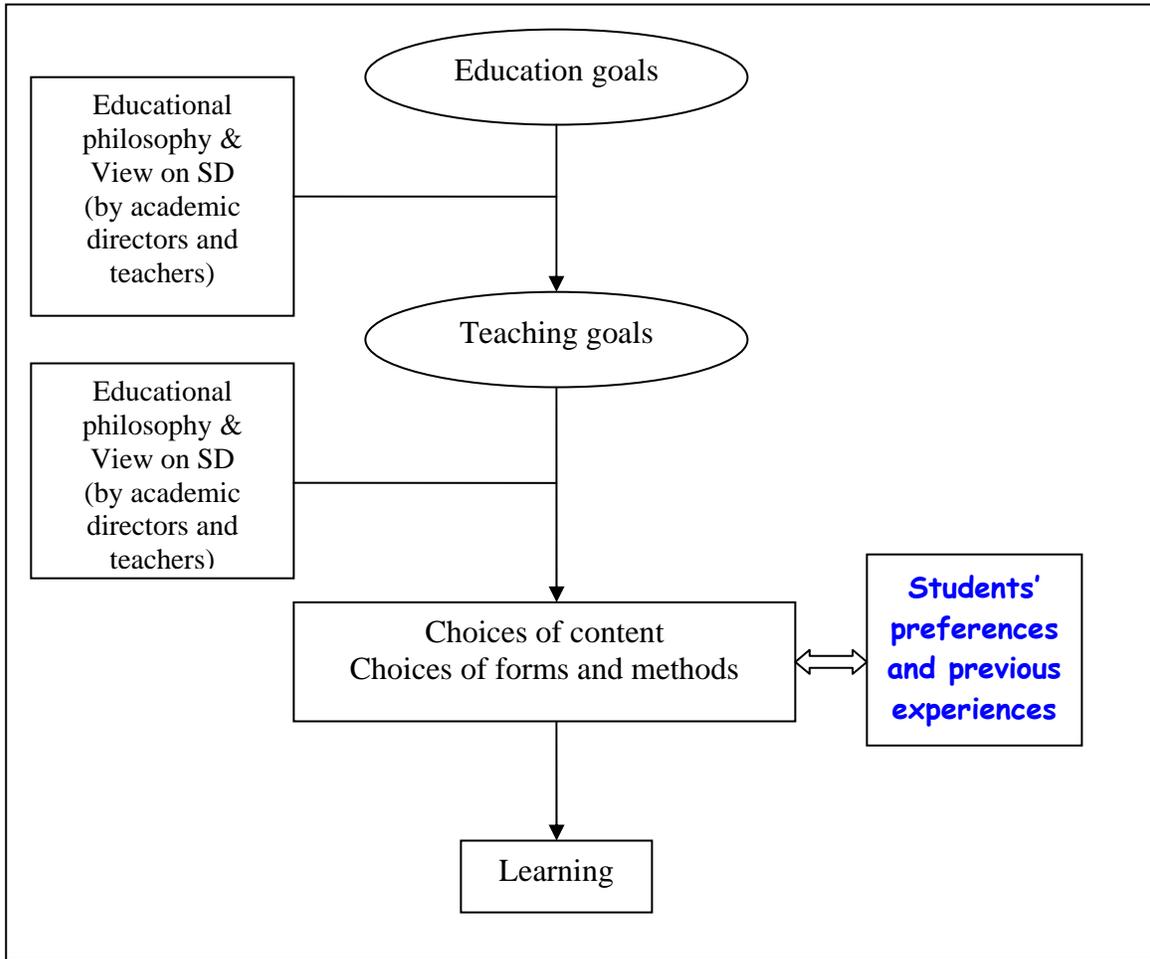


Figure 1-2 A model for ESD

Source: Sandell et al., 2005:233

2 Theoretical foundations

Sustainable development

In the Brundtland Commission, “Sustainable Development” was first time introduced as:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs

(World Commission on Environment and Development 1987, cited by Lidgren, 2004: 13)

In recent years, resource management is no longer handled from the ecological perspective only; rather the three dimensions: ecological, economic, and social dimensions are treated equally. Sustainable development is not equated as environmental protection any longer. In the new concept of SD, the three aspects of sustainability: ecological, economic, and social aspects should be considered equally important (Steiner & Posch, 2006:878).

Roles of higher educational institutions

A traditional role of universities and colleges was to create an environment for communicating and circulating knowledge and thoughts (Newman, 1959 cited by Right, 2006:761). In a new circumstance, a modern university does not only give knowledge, but also can help students in developing an ability to search for knowledge, compile knowledge, and apply into specific situations; thereby graduates are ready to deal with real and complex issues of society (Brubacher, 1982 cited by Right, 2006:761). With all of the activities: research, education, campus activities, and policy development; higher education institutions are responsible for conveying moral vision and technical knowledge (Right, 2006:761&762).

Students who study and do research at higher education institutions are future politicians, teachers, engineers, and decision-makers. Therefore, universities and colleges have the possibility of educating people who can affect the future by their decisions (Eagan & Keniry, 1998:9 cited by Dahle & Neumayer, 2001:142). From education and campus life, higher education institutions can make students understand how their decisions and activities now and in the future connect with the environment and outside society, thereby supporting for environment-friendly behaviors and attitudes, as well as encouraging responsibility with outside society (Creighton, 1999 cited by Dahle & Neumayer, 2001:142).

Should higher educational institutions contribute to sustainable development?

In fact, environmental problems cannot be the work of ignorant people. Environmental problems are mostly caused by well-educated people with BA's, B.Sc.'s, MBA's and PhD's (Orr, 1995 cited by Right, 2006:762); especially well-educated people in

developed countries who consume about three quarters of the earth's natural resources (Wackernagel & Rees, 1996 cited by Right, 2006:762). Therefore, universities and colleges should play an important role in educating future graduates to dealing with sustainability issues; and take on the leadership for contributions to SD. Moreover, the President of the Australian Association for Environmental Education stated in 1998:

If we continue to produce lawyers, business people, teachers, doctors, politicians, and other graduates while failing to create in them a high degree of environmental literacy, a university is not fulfilling the obligations it has to society.

(Dingle, 1998 cited by Thomas, 2004:34)

There has been a growing consensus of opinion on higher educational institutions' role in the struggle to achieve SD. SD framework should not be a concern only at governmental level (Leal Filho et al., 1996 cited by Dahle & Neumayer, 2001:141). This opinion is supported by McDonald (2006) when discussing about experience of Manitoba's provincial government (Canada) on the way moving towards ESD. After two times failing in developing and implementing ESD action plan although the province committed to move towards ESD, Manitoba has learned that ESD should not be done by government alone. In order for ESD to take root, it should be done together by individuals, educational institutions, organizations, corporations and society (McDonald, 2006:1015). Therefore, all stakeholders, consisting higher education institutions, should take part in the struggle to move towards SD (Leal Filho et al., 1996 cited by Dahle & Neumayer, 2001:141). Many organizations and institutions have admitted the important role of universities and colleges in promoting SD, for example the United Nations, the European Union, a number of agreements, governmental policies, and a large number of research reports (Dahle & Neumayer, 2001:141).

Education for sustainable development and what ESD can achieve

It appears that the time is right to move towards ESD. The period from 2005 to 2014 is declared as the Decade for Education for Sustainable Development by the United Nations, in which, the United Nation called upon governments around the world to pay attention to ESD (McDonald, 2006:1015).

Some important attribute of ESD are highlighted by many researchers. According to Thomas (2004), ESD should include an aspect of "*the need to accept the probability of survival of our species*" (Thomas, 2004:35). An aspect of attitude of care, especially "*uncompromising commitment to life and its preservation*" was mentioned by Orr (1992) (Orr, 1992 cited by Thomas, 2004:35). According to Sandell et al. (2003), the ethnical aspect is centrally important to SD understanding, and ESD should enable students to join in critical discussions about different alternatives and their outcomes. Moreover, economical, social and ecological aspects must be considered and coordinated so that they can have mutual benefit to each other (Sandell et al., 2003:192&193).

When environmental and sustainability issues are increasingly interested by many societies and communities, support for environment protection and sustainable

development can give universities and colleges a good image to the outside society, thereby increasing competitiveness and benefit for both higher education institutions and students (Creighton, 1999 cited by Dahle & Neumayer, 2001:142).

3 Empirical studies

Three traditions of environmental education

There are three traditions of environmental education that have developed and have been all present in schools today: Fact-based environmental education, normative environmental education, and education for sustainable development (Sandell et al., 2003:159).

Fact-based environmental education

Approach to the environment

During the development of environmental education, fact-based environmental education gradually took form in the 1960s, and well-developed in during the 1970s (Sandell et al., 2003:160). In this type of environmental education, environmental problems are questions of natural science, specifically questions of ecology. Environmental problems are unexpected results of industry and exploitation of natural resources, and will be solved by natural scientists. Human beings are considered separately from the nature. Human beings have the task to control the nature in a way that can encourage industrial production and high living standard (Sandell et al., 2003:160, 161, 165 & 166).

Goals, content and teaching methods

The goal of fact-based environmental education is to teach scientific facts of localized problems. Lessons and material are organized in separate subjects which mainly focus on natural sciences. The most common way of teaching is teacher-led lessons. Other methods are laboratory tests and field trips. Students learn about scientific facts and make their own conclusions and act on them. Student participation does not take place in an active way. Teachers plan lessons based on their observation and experience (Sandell et al., 2003:161, 166 & 167).

Normative environmental education

Approach to the environment

Environmental problem debates from a social viewpoint emerged during the 1980s led to new type of environmental education called “Normative Environmental Education”. In this tradition, questions of environmental problems are seen as questions of different values belonged to humankind and nature. Therefore, environmental problems are caused by conflicts between human beings and the nature. Scientists from various fields should be consulted in order to solve those environmental problems. Human beings are considered as one element of the nature and should cooperate with its laws (Sandell et al., 2003:162, 165 & 166).

Goals, content and teaching methods

The main goal is to let students actively develop environmentally friendly behaviors based on scientific knowledge, mainly ecological knowledge. The content of education which mainly contains natural sciences and social sciences is organized in a thematic way. Lessons usually are group-based activities and field trips which let students find information by themselves and learn practical experience. Students and teachers can plan lesson together (Sandell et al., 2003:162 & 166).

Education for sustainable development

Approach to the environment

ESD was developed during the 1990s, which had connection with the Rio conference (1992) and Agenda 21. In this tradition, causes of environmental problems are understood as conflicts between various humans' achievement goals. Therefore, environmental problems are considered as political and ethnical issues, and everyone has equal roles in deciding the results of political and moral issues, hence the democratic process is put in central importance. The environmental theme in this tradition is widened and connected with the whole spectrum of social development. Thus, the environmental concept is changed to sustainable development concept (Sandell et al., 2003:163-167).

Goals, content and teaching methods

The central goal of this tradition is to let students actively and critically evaluate many different perspectives of environment and development issues. Central subjects of this tradition should contain ecological, economical and social aspects, as well as moral aspects. Lessons should be planned by students under supervision of teachers; therefore students have very active and critical roles. Fact-based and experience-based methods are the most common tools of teaching and learning in this tradition in order to let students get various perspectives of development issues and complexity of sustainability issues (Sandell et al., 2003:164-167).

Barriers towards inclusion of SD into education

There are various reasons why including SD into education can be difficult. One important idea towards barriers to include sustainability at universities' activities is the misconceptions of the concept of sustainability. According to Walter Leal Filho (2000), misconceptions of the process of SD are numerous, as well as there are many misconceptions of what sustainability represents to higher educational institutions. Walter Leal Filho also mentioned five main misconceptions: "sustainability is too abstract", "sustainability is too broad", "no human resources to take care of sustainability", "sustainability demands considerable resources which we do not have or cannot justify", "sustainability does not have a scientific basis" (Leal Filho, 2000:14&15). Educational institutions can blame such misconceptions connected to sustainability on their reluctance to include sustainability measures into their activities.

Other obstacles are lack of interest, and commitment to sustainability, which were found at Tufts University on the process of greening the university (Creighton, 1999 cited by Dahle & Neumayer, 2001:143).

4 Methodology

This research was designed as a cross-sectional study. This design is useful to obtain an overall picture of a situation or attitude at the time of the study by taking a cross-section of a studied group (Kumar, 1999:81).

Two tasks were carried out at the same time: interviews with heads of programmes; and a survey and interviews with students. The study was done among international master's programmes only. Therefore, both students and heads of programmes were selected among those programmes. The sample should include students and heads of programmes from various areas: social science, economic, law, natural sciences and engineering fields.

4.1 A Survey regarding Education for Sustainable Development among students

A questionnaire was constructed in this study. The questionnaire was divided into three parts in order to:

- ✓ assess the current attitudes towards sustainability among students;
- ✓ let them express whether they are willing to have ESD into their programme; and
- ✓ how they prefer to include ESD into their programme

To construct the questionnaire for students (see Figure 4.1), firstly, four students from computer science, biotechnology, social science, and language were interviewed to get initial information. Interviews with students at the first stage were unstructured interviews. The whole idea was to understand how much they knew about SD and their attitudes towards ESD. Unstructured interview was used because there was little known about the current understandings of students towards SD at the beginning. By using this type of interview, it was hoped that the researcher could gain as much information as possible and that information would be used later in constructing a more structured research instrument, in this case, a questionnaire. Questionnaire was built on that initial information together with available literature in the second stage of constructing the questionnaire. Finally, those students who were interviewed at the beginning were asked to answer the questionnaire. After listening to their ideas, corrections were made to ensure that the questionnaire was easy to understand. Answers from those students were not taken into the final results of the survey.

The questionnaire then was distributed among international master's students. There were two ways of administrating the questionnaire in this study. At the beginning, collective administration was applied; questionnaire was distributed to students while attending classes, this method ensured a very high rate of response. Moreover, by doing collective administration, the researcher had personal contact with students; hence, the researcher could explain the purpose of this study, clarifications and questions were answered when needed (Kumar, 1999:113).

However, in some programmes, students were away doing their thesis; therefore, the e-mailed questionnaire was used. Major problem with this method was low response rate, and there was no opportunity to clarify something in the questionnaire in case students needed to have extra explanation. Another problem with this method is self-selecting bias. It is because not all of students will response; therefore, the one who gives answer may have attitudes and motivations different from those who do not answer (Kumar, 1999:114)

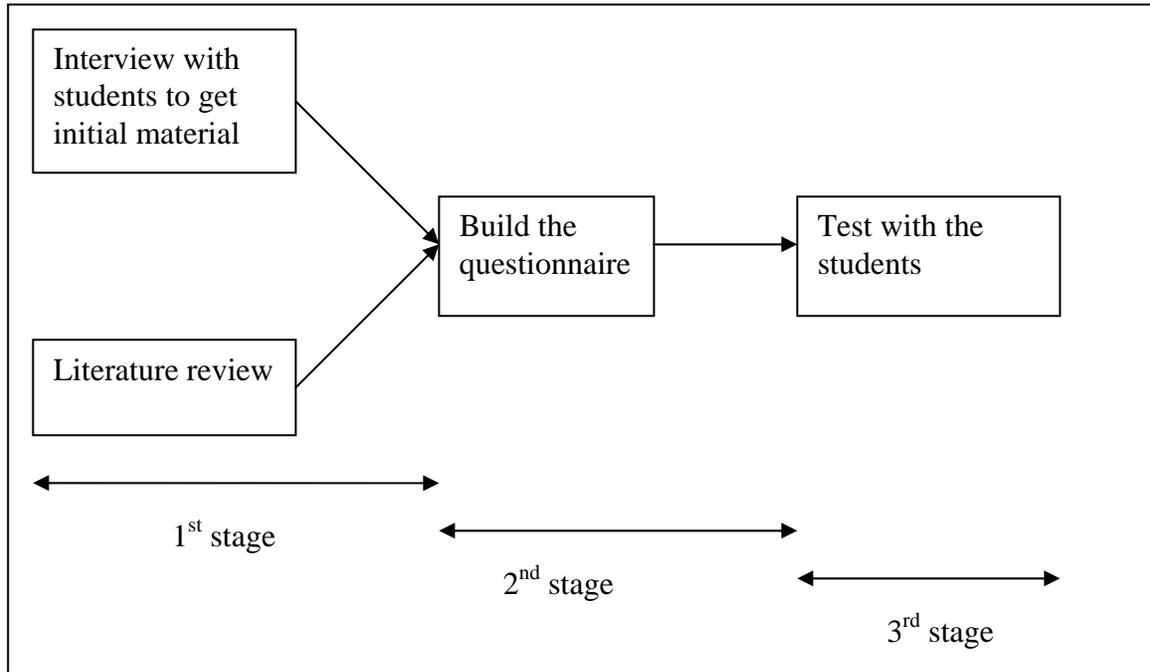


Figure 4-1 Three steps in constructing the questionnaire for students

The questionnaire for students

As stating before, the questionnaire was divided into three parts; following is explanation for each part

Part one: Assessment of students' attitudes towards sustainability

In the first part of the questionnaire, seven attitudinal statements were posed and students were asked to give their opinions by stating whether they “strongly agree” (1), “agree” (2), “neither agree or disagree” (3), “disagree” (4), and “strongly disagree” (5)

To assess students' awareness of sustainability, five attitudinal statements which were defined as being sustainability by O’Riordan (1976) (O’Riordan, 1976 cited by Holt, 2003:333) were used:

- (1) *We owe a duty to our children and grandchildren to preserve the environment*
- (2) *We have a duty to other people and to our families*

(3) *I want my children and grandchildren to see and enjoy those things I enjoyed as a child*

(4) *We owe a duty to animals and nature; they don't exist just for our enjoyment*

(5) *The Earth and Nature are fragile and we can easily cause irreversible damage*

Two statements which were not defined as being sustainability were also used:

(6) *We have no choice: we have to protect the environment or we will destroy the human race*

(This statement was classified as ecocentric statement)

(7) Without economic growth, a country will not be able do the things it wants to do

(This statement was classified as technocentric statement)

(O'Riordan, 1976 cited by Holt, 2003:333)

Statements (6) and (7) were selected because it should be interesting to see students' ideas about economic growth and environmental protection.

Part two: Students' ideas about ESD

There were three statements which were presented and given as the same style as the first part.

Statement 8: “Education for Sustainable Development simply means Education for Environmental Protection”

Why was the term “Environmental Protection” used? At the first step of constructing the questionnaire, interviews with some students gave a result that they often misunderstood SD as “environmental protection”. Therefore, this statement was to see how the rest of the students would agree with this idea. Moreover, this statement was also a preparation for the statement 9. The overall idea was to see how students understood the concept of SD. Therefore, had 9th statement been presented without 8th one, it would have been quite suggestive to respondents.

Statement 9: “Another concept of Education for Sustainable Development has developed, in which Education for Sustainable Development should include three dimensions: environmental protection, economic well-being, and social justice. How would you agree with this concept?”

There are many definitions of sustainable development. In this statement, the three dimensions were used to ask students because it was simple and the thesis author did not want to use any definitions of SD. It was also relevant to an intention of LU that SD

knowledge should include three ecology, society and economy aspects². Moreover, according to Rietje van Dam-Mieras (2006):

Learning for sustainable development could be described as learning to deal with dilemma's in a complex societal context in which, economic and socio-cultural aspects are at stake
(van Dam-Mieras, 2006:13)

It has been acknowledged that there is a problem in using three said words: “*environmental protection, economic well-being, and social justice*” in this statement. Those three words do not carry the whole meaning of ecology, economy, and society aspects, but just one part of it. However, there was also a question of simplifying a statement to make sure that students could understand the statement. Therefore, those three words were still used in the questionnaire and the result would be considered with care and compared with results from interviews with students later on.

Statement 10: “How would you agree if THAT concept of Education for Sustainable Development (in question number 9) will be included into your program?”

This was simply for students to state how they would they agree with the state that SD knowledge which contains three dimensions (society, ecology and economic) will be included into their programme.

Part three: What type of ESD students prefer to have in their programme

In this part, four statements about characteristics of Environmental Education Traditions were presented and students were asked to choose one answer each question. The answers of each statement were organized as (A), (B), and (C) representative of characteristics of Fact-based Environmental Education, Normative Environmental Education and Education for SD respectively (see Table 4-1). The idea was that whether or not students understood the meaning of SD, the statements of this part of the questionnaire would be a chance for them to express what type of ESD they would like to have in their programme by choosing what characteristics of an educational tradition they prefer.

However, in the statement 13 which reflected organization of lessons and materials, the answers given to students were:

- (A) Providing *new separate optional courses* in my program
- (B) Providing *new separate compulsory courses* in my program
- (C) Include in *some existing courses* in my program

It meant that those answers were basically limited to these two types of Environmental Education Traditions only, namely: Fact-based Environmental Education (Answer A and B) and Normative Environmental Education (Answer C). It was because when interviewing students before constructing this questionnaire, many students hardly got

² This information was obtained from an interview with Elisabeth Gierow, Head of Team Environment and Safety, LU on 30 March 2007. ESD at LU was the main topic of the interview.

what exactly would be done with “*integrating SD into all courses*”. They needed some extra explanations. Therefore, it was hard to include in a questionnaire since there was no extra explanation when students answered the questionnaire.

Additionally, in the first step of introducing ESD at LU, it would be complicated if SD is integrated in all courses of a programme. When SD is introduced into a programme, two types of organizing lessons which are “separate courses dealing with SD issues” and “inclusion of SD into some existing courses” have been used widely. Integrating sustainability into all courses of a programme has usually been applied for specialist environmental programmes, or programmes mainly dealing with sustainability issues (Thomas, 2004:35).

Table 4-1 Some characteristics of Environmental Education Traditions: goals, content, teaching methods and organization of lessons and teaching materials

Tradition of Environmental Education	Fact-based Environmental Education (A)	Normative Environmental Education (B)	Education for Sustainable Development (C)
Goals (Statement 11)	Students get knowledge of environmental issues by studying scientific facts	Students actively develop environmentally friendly behaviors based on scientific knowledge, mainly ecological knowledge	Students actively and critically evaluate many different perspectives of environment and development issues
Central subjects (Statement 12)	Natural sciences	Natural sciences and social sciences	Aspects of ecological, economical, social science as well as ethical aspects
Main teaching method (Statement 14)	Knowledge is given to students by teachers	Teachers give knowledge and students actively contribute to knowledge as well	Critical discussion among students and teachers
Organization of lessons and teaching materials (Statement 13)	Separate subjects	Thematic	Integrated

Source: Sandell et al., 2005:166&167

Moreover, at the beginning, integrating SD into all courses at a programme would be very hard because of a question of qualified teachers who should know about SD. It is also a question of whether it is possible to train all the teachers. There is a lesson of this

issue which was mentioned by Ferrer-Balas et al. (2006) in the evaluation process at the end of the Second Environmental Plan (2002-2005) of the Technical University of Catalonia (UPC), Barcelona. During the evaluation process, it was recognized that there was a great lack of an all-embracing understanding of SD and interdisciplinary skills. It was also noticed that it was impossible to train SD to unmotivated teachers (Ferrer-Balas et al., 2006:27). However, the authors stated that it would be possible to train new young teachers and PhD students (Ferrer-Balas et al., 2006:27). And this obviously will take some time.

The last part of the questionnaire contained only one statement which was for students to express their favorite means of teaching and learning for SD. Students could choose as many as they wanted among nine options (Videos, Story telling, Speakers, Problem-based, Field trips, Class projects, Class discussions, Case studies, Assigned readings), and wrote down “others” options they might have; then students were asked to pick up three items they favored the most. These items were chosen based on a result of a study done by Davis et al. (2003). This research provided some most common used methods to incorporate sustainability perceived by faculties’ members, administrators, staff and students at two institutions, Northern Arizona University and the University of South Carolina (Davis et al., 2003:174&175).

All of the questions in the questionnaire are closed-ended questions, hence the most advantage is that answers will be within “ready made” categories and therefore, it is easy to obtain information and analyze results (Kumar, 1999:119). However, there are several disadvantages with this type of questions. According to Ranjit Kumar (1999), the main disadvantage is that results obtained will not deep and various. Such questions can create investigator bias. The respondents may choose answers without thinking. Moreover, closed-ended questions would lead respondents’ opinions. Respondents in this case may not express their real answers, rather they could just express the extent to which they agree or disagree with the opinion of the researcher (Kumar, 1999:119).

Importantly, the multiple answers given to questions in the questionnaire could influence each other. Before answering, respondents could read all the questions which happens quite frequently, thus their answer in a specific question could be affected by other questions too (Kumar, 1999:114). This can happen among statement 7, 8 and 9 of the questionnaire.

4.2 Interviews with students and heads of programme

Interviews with students

The interviews with students were to get specific information about their views on ESD. The purpose of interviews was to confirm results of the survey, more importantly, to listen to what they needed. Therefore, questions for students (see Table 4-2) were to:

- ✓ assess students attitudes towards sustainability (Question 1);
- ✓ let students express whether they are willing to have ESD into their program (Question 2); and

✓ understand how they prefer to include ESD into their program (Question 3)
Question 4 was to see how students think about competitiveness of LU among other universities around the world if SD is included in all programmes at LU. This was mainly aimed at understanding how students would think about competitive position of LU when SD will be visible at all programmes, hence to assess whether students were willing to make change in their programme.

Table 4-2 Questions for students

<p>Fours questions at interviews with students:</p> <ol style="list-style-type: none">(1) Have you ever heard about SD? Can you explain what it means?(2) Do you want to learn about SD at your program? Why yes? /Why no?(3) How do you want to learn for SD?(4) Do you think LU will gain or lose a competitive advantage over other universities around the world by including SD into all programmes?
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Interviews with heads of programmes

Interviews with programme heads consisted of three parts (see Table 4-3). The first part was to assess the current awareness (Question 1) of the policy; and willingness (Question 2) to implement it, by asking whether heads of programme understood the motivation behind this policy. If the answer for question 1 was “No”, the interviewees were given some explanation on the “LU Environmental and Sustainability Initiative”. In the second part, the programme’s structure and syllabus were analyzed before an interview; and results were confirmed with the director of that programme during the interview in order to get information about current status of learning and teaching for SD at his/her programme. Therefore, questions in this part varied among different programmes. The last part was to assess difficulties (question 3) in including SD into programme, and how to overcome or reduce those barriers (question 4) based on their views. Question number (5) asked whether society outside put pressure on programmes to teach SD to their students. This question was also used to assess the willingness of adding SD into programmes.

The interviewees (students and heads of programme) were informed at the beginning that all data would remain anonymous. Both interviews with students and heads of programmes were semi-structured interviews designed with open-ended questions. Semi-structured interview was applied because in this type of interview, a core of issues can be set at the beginning, but at the same time allows free space for interviewees to decide the sequence and the relevance of that core of issues (Freebody, 2003:133). Therefore, a set of questions were designed at the beginning of an interview; and during the interview, the researcher will follow and reflect particular opinions on an ad hoc basis (Freebody, 2003:133). By using semi-structured interviews, it was hoped that interviewees would speak freely, and give in-depth and rich information; at the same time, core issues would be kept and it would provide uniform information. Open-ended questions were used with the intention to let interviewees express their viewpoints freely; hence investigator bias could be avoided (Kumar, 1999:118). Additionally, semi-structured with open-ended questions were used to create less artificial atmosphere of an interview. However, this

approach can cause interviewer bias (Kumar, 1999:118) and can reduce possibility of direct comparison across interview data (Freebody, 2003:134).

Table 4-3 Three parts and questions of an interview with heads of programme

Part one: awareness and motivation

(1) Have you ever heard about the “LU Environmental and Sustainable Development Policy”, in which knowledge of SD will be included in all programmes at LU?

(2) Do you see any motivation behind this new policy?

Part two: how far have those programmes reached concerning inclusion of SD into education?

Confirm current status of teaching and learning for SD

Part three: barriers and possible ways to reduce/overcome

(3) What are the most difficult barrier(s) your program has to face (or are facing) if sustainable development is going to be included (or is included) into your programme?

(4) How do you think those barriers can be reduced/overcome?

(5) Have you ever received order/pressure from outside (organizations, business, ect.) that you should give sustainability knowledge for your students?

4.3 Analyses of data

Data from the survey

All questions in the questionnaire were closed-ended, therefore, it was quite simple to analyze. The results of the first part of the questionnaire was calculated and presented by mean scores. If the result of a statement varies from 1-3, it is assumed that the said statement is agreed among students. If the result of a statement varies from 3-4, it is taken as disagreed among students. Results of the rest of the statements were calculated in percentage, in order to see the dominant opinions towards asked questions.

Data from interviews

Data of the interview were analyzed by coding and classifying into groups. Because open-ended questions were used, there were no categories existing before analyzing the results. The frequency distribution of each category was noted. This was done in order to see what would be the most common categories and therefore, the most important ones.

In part two of interview with heads of programme (see Table 4-3), the programme’s structure and syllabus were analyzed in order to see whether three dimensions (social, ecological, and economic dimensions) of SD were addressed at that programme as a whole. To assess how far a programme has reached in the inclusion of SD into education, a five stage process of the adoption of a new idea (see Table 4-4) offered by Rogers (1962) was used. In this process, an individual can start from different stages, for

example, an individual can start from “trial” stage first without going through “evaluation” stage. However, for the incorporation of the new idea happens, an individual must reach “adoption” stage (Rogers, 1962 cited by Lozano, 2006:789).

Table 4-4 Five stage process of the adoption of a new idea

1. Awareness	The individual becomes aware of the new idea
2. Interest	The individual is interested in the new idea
3. Evaluation	The individual tries the new idea to present situation and evaluate and judge its future potential
4. Trial	The individual apply the new idea into practice in a micro approach
5. Adoption	If the results are convinced, the individual will apply into practice to the extend that his position allows him to do so, or he will refuse the new idea for various reasons

Source: Roger (1962) cited by Lozano, 2006:789

There are several factors concerning the findings from interview with heads of programmes. Because of the particularity of each programme (number of students, major subjects, students from different backgrounds, ect.), answers from heads of programmes could vary a lot. Data are mostly based on interviewees’ viewpoints; therefore, could be subjective. However, interviewees are holding important positions of programmes; their answers hopefully could be trusted and convincing.

4.4 Materials

In this study, primary material had been used to study the local conditions. Primary data from interviews with interviewees and survey with students whose jobs and positions are related to ESD and education at LU were used to answer research questions and hypotheses. It was hope that primary data would give correct information on the research matter. Secondary material was also used to compare results from interviews and survey. Secondary material was mainly from scientific articles, especially from The International Journal of Sustainability in Higher Education, and Journal of Cleaner Production.

5 Results and Discussion

5.1 Results of the survey

After sending the questionnaire, there were 68 students from different programmes replied (see Table 5-1)

Table 5-1 Programmes which had students answering the questionnaire

Program	Number of replies
1. Master Programme in Society, Science and Technology	8
2. Master of Science in Computer Science	9
3. Master Programme in Asian Studies (students are from 3 majors: Gender, Development and International Relations)	29
4. Master Programme in Bio and Food Technology	11
5. Master Programme in International Marketing and Brand Management	5
6. Master of European Affairs	3
7. Master of International Human Rights Law	3

Following is findings and discussions of each part of the questionnaire:

Part one: Students' attitudes towards sustainability

Results from students at LU were not very different from those from School of Social Science (SS) and Middlesex University Business School (MUBS) from Holt's study in 1998 (See Table 5-2). In the group of LU students, average scores of statements (1, 2, 3, 4, 5) defined as being sustainability range from 1.4 – 1.6, meaning that those statements were strongly agreed by the LU students. Those statements also included the support for inter-generational equity and futurity (Holt, 2003:334). Therefore, students at LU have very a strong support for sustainability; and students strongly agree on inter-generational equity and futurity.

Statements 6 and 7 gave an interesting result that students agreed "*we have to protect the environment or we will destroy the human race*"; however, students also agreed that economic growth was very important to a nation. This idea could be representative of typical paradigm of environmental management of all societies, that economic growth could be able to ensure better care for the environment (Holt, 2003:332). In these two statements, there were slightly differences among LU, SS and MUBS. Level of agreement at LU (average score 2.0) was less than that at SS (average score 1.8) and MUBS (average score 1.8) in the statement 6. Statement 7 which supported economic growth was agreed upon in the strongest manner by students at MUBS (average score 1.9). That was quite understandable given the impetus to economics provided in any business study. It was followed by the students at LU (average score 2.0); followed by students at Social Science (average score 2.5).

Table 5-2 Average scores of students' opinions on attitudinal statements

Attitudinal statements	Lund University	School of Social Science	MUBS
1. We owe a duty to our children and grandchildren to preserve the environment (E, SD)	1.4	1.4	1.5
2. We have a duty to other people and to our families (E, SD)	1.5	1.6	1.7
3. I want my children and grandchildren to see and enjoy those things I enjoyed as a child (E, SD)	1.5	1.4	1.4
4. We owe a duty to animals and nature; they don't exist just for our enjoyment (E, SD)	1.6	1.5	1.7
5. The Earth and Nature are fragile and we can easily cause irreversible damage (E, SD)	1.6	1.4	1.6
6. We have no choice: we have to protect the environment or we will destroy the human race (E)	2.0	1.8	1.8
7. Without economic growth, a country will not be able do the things it wants to do (T)	2.2	2.5	1.9

Notes: (E): Ecocentric statement, (T): Technocentric statement, and (SD): Sustainable Development Statement

Source: Holt, 2003:333 & Result from the survey this thesis

Part two: Students' ideas about ESD

(All of the values in the graphs are in percentage of total answers)

Statement 8: "Education for Sustainable Development simply means Education for Environmental Protection" (See Figure 5-1-a)

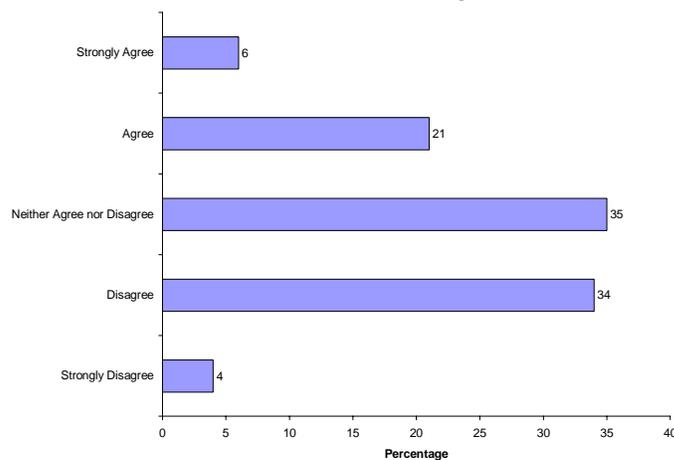


Figure 5-1-a Attitudes towards ESD

Statement 9: *“Another concept of Education for Sustainable Development has developed, in which Education for Sustainable Development should include three dimensions: environmental protection, economic well-being, and social justice. How would you agree with this concept?”* (See Figure 5-1-b)

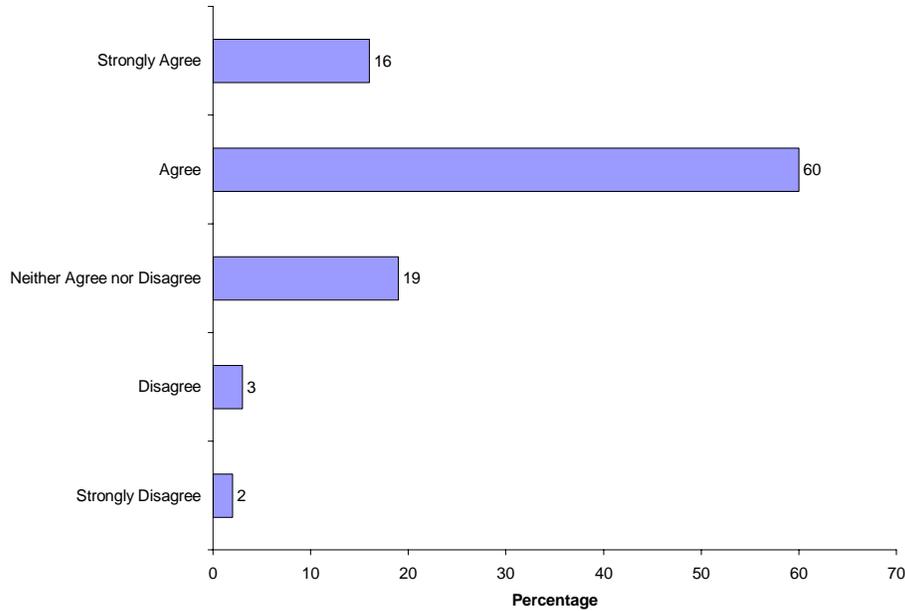


Figure 5-1-b Attitudes towards ESD

Results from statement 8 and 9 (see Figure 5-1-a and Figure 5-1-b) showed a quite positive sign of understandings of SD among students that they tended to agree on the three dimensions of SD. However, those results would be compared with results from in-depth interviews with students.

Statement 10: *“How would you agree if THAT concept of Education for Sustainable Development (in question number 9) will be included into your program?”* (See Figure 5-1-c)

The result of statement 10 (see Figure 5-1-c) showed quite high agreement upon inclusion of SD into programmes, with 53% “agree” and 19% “strongly agree”.

There was another interesting finding in this result. Overall, there were four answers stating “strongly disagree” and five answers stating “disagree” towards adding SD into programmes. Four “strongly disagree” answers and two “disagree” answers were found among computer science students; and two “disagree” answers were found among marketing students. This finding can be explained by two reasons. Firstly, within the fields of computer science and economics, it seems that SD knowledge cannot to come into curriculum in a very natural way. In other words, those fields do not provide the foundation for developing SD knowledge. Therefore, it could be one reason why students resisted it. This was further explained in one comment of a computer science student: *“I am here to study mathematics and computer science, not environmental studies. So it would not be good to include into my program. I don't want to have it”*.

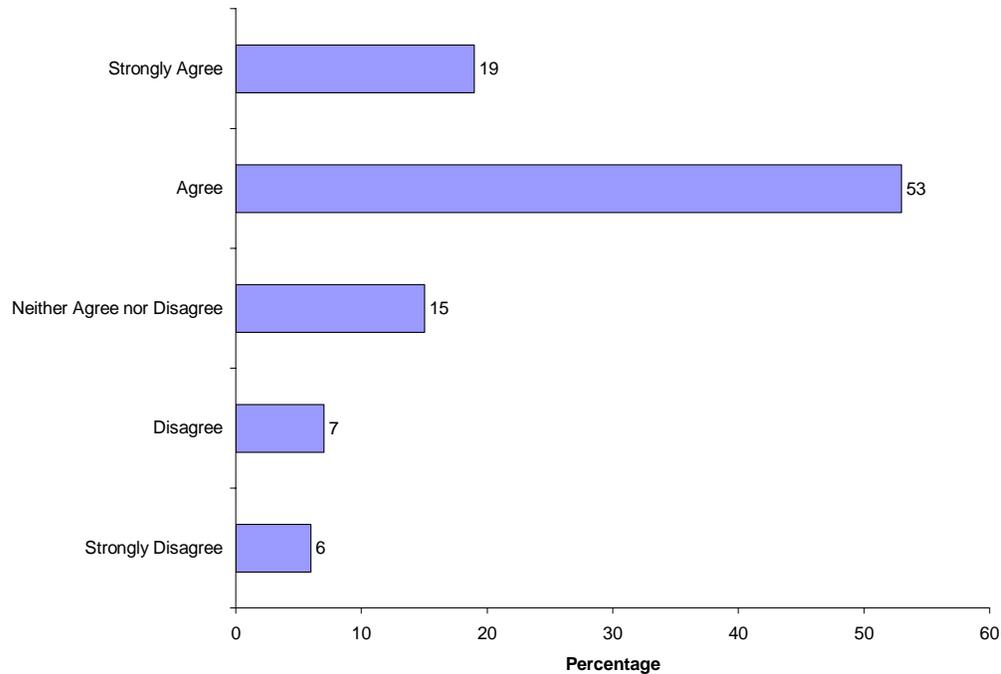


Figure 5-1-c Attitudes towards Education for Sustainable Development

Secondly, from the finding and the comment henceforth, purportedly it could be that the statement 10 was not clear or well-designed enough. The statement would have been clearer if it had stated that SD knowledge which is to be included into a programme will be *relevant* to the said programme. By doing that way, the statement should have been more customized in harmony with the field of study of the particular student.

Therefore, the statement 10 could be clearer by stating: “*How would you agree if the concept of sustainable development containing three aspects: ecology, economy and society which are relevant to your programme will be included into your programme?*”

Part three: What type of ESD students prefer to have in their programme

(All of the values in the graphs are in percentage of total answers)

Statement 11: “*The goal of Education for Sustainable Development is*” (See Figure 5-2)

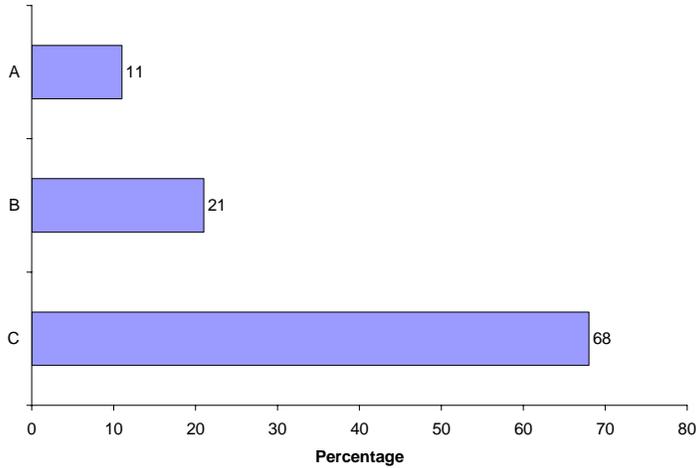


Figure 5-2 Students' opinions on goals of ESD.

(Note:

- A. Students get knowledge of environmental issues by studying scientific facts
- B. Students actively develop environmentally friendly behaviors based on scientific knowledge, mainly ecological knowledge
- C. Students actively and critically evaluate many different perspectives of environment and development issues)

Statement 12: “Central subjects of Education for Sustainable Development are” (see Figure 5-3)

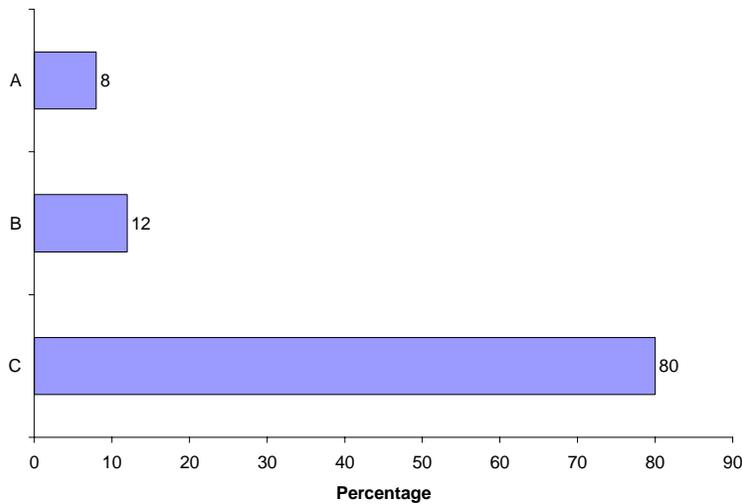


Figure 5-3 Students' opinions on central subjects of ESD

(Note:

- A. Natural sciences
- B. Natural sciences and social sciences
- C. Aspects of ecological, economical, social science as well as ethical aspects)

Statement 14: “Main teaching method is” (see Figure 5-4)

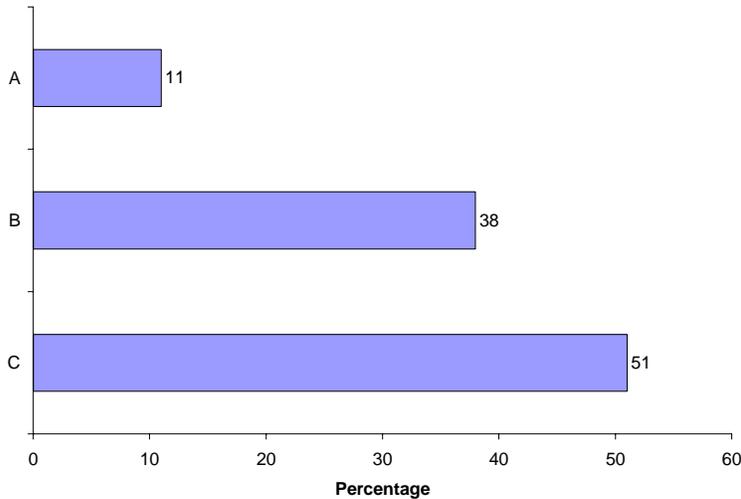


Figure 5-4 Students’ opinions on main teaching methods of ESD

(Note:

- A. Knowledge is given to students by teachers
- B. Teachers give knowledge and students actively contribute to knowledge as well
- C. Critical discussion among students and teachers)

The majority of students chose “Education for Sustainable Development” characteristics (Answer C) (see Figure 5-2, Figure 5-3 and Figure 5-4). It meant most of students preferred to have ESD at their programmes, a small minority of students preferred Fact-based Environmental Education and Normative Environmental Education.

Statement 13: “Lessons and materials for Education for Sustainable Development should be given by” (See Figure 5-5)

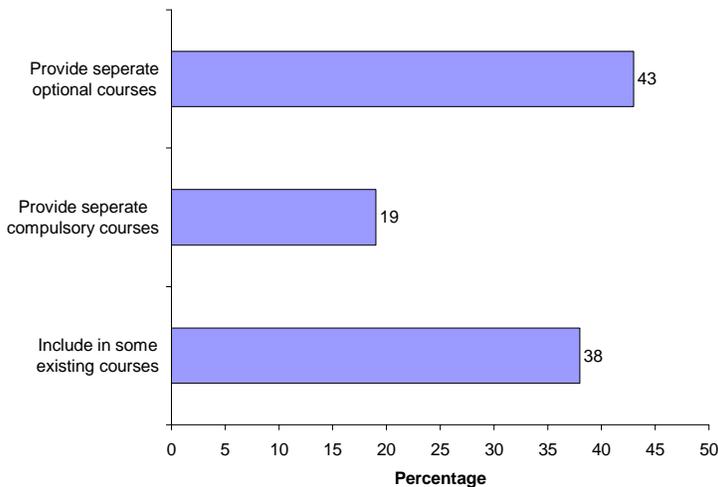


Figure 5-5 Students’ opinions on organizations of lessons and teaching materials for ESD

Regarding statement 13 posing “Organization of lessons and teaching materials” (see Figure 5-5), the result showed that compulsory courses were not supported widely by students. Majority of them chose separate optional course (43%) and inclusion of SD in some existing courses (38%). However, this statement would be further explored in interviews with students.

Statement 15: “Please choose your favorite means of teaching and learning for sustainable development, choose as many as you want” (see Figure 5-6)

(All values in the graphs of figure 5-6 and figure 5-7 are in total number of responses by interviewees. For example, if there were 28 students chose “assigned reading” as their favorite means of teaching and learning for SD, the result in the graph is 28 for “assigned reading”)

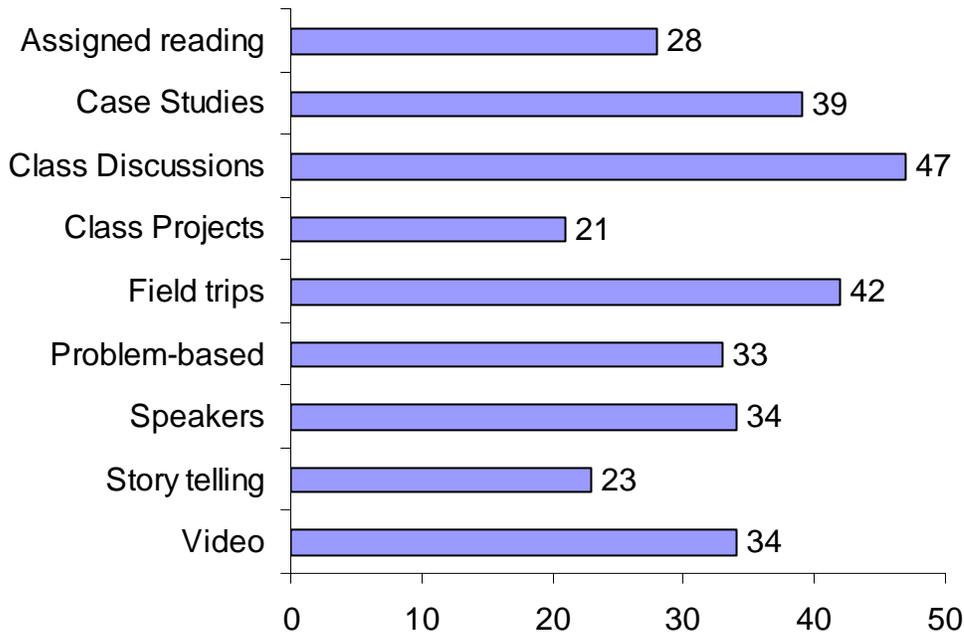


Figure 5-6 Students’ favorite means of teaching and learning for ESD

There were three other methods written down by students, which were:

- ✓ Lectures given by specialists from various relevant areas (economics, sociology, environmentalist studies, business) together with discussion
- ✓ Experience sharing
- ✓ Simulation with a participatory approach

Students were then asked to pick up three items that they favored the most. The figure 5-7 showed results of the most favorite means of teaching and learning for SD chosen by students

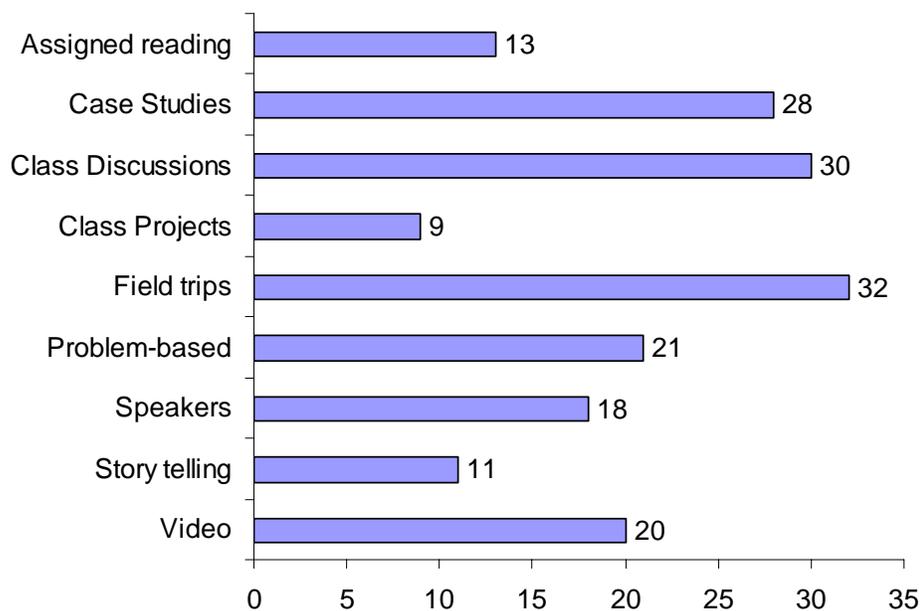


Figure 5-7 Students' most favorite means of teaching and learning about ESD

5.2 In-depth interview with students

In-depth interviews were carried out after doing the survey. Six students belonged to Computer Science (1 student), Bio and Food Technology (2 students), and Asian studies (3 students) agreed to join in the interview.

Regarding question 1 “Have you ever heard about SD? Can you explain what it means?” all students said “yes” and their explanation for SD varied (see Table 5-3).

Table 5-3 Students' explanation for SD

Student's explanation for SD	Answer
Environmental Protection	2
Brundtland definition	2
“SD is the type of development which ensures economic growth, and protects the environment at the same time”	1
“If I can use only one word to describe SD, I would use the word “friendly”. SD should entail not only care for environment, but also care for economic, politics, and social aspects. Those aspects should be linked and equal. People always ignore social aspects when talking about SD, which to me is not correct. SD should concern about sustainable society, ethnicity, values, customs and traditions”	1

There was just one student who could explain the meaning of SD using the whole three dimensions of SD.

Two students used the Brundtland definitions. However, one student was not very certain about the meaning of “*the needs of the present and future generations*” (terms used in Brundtland Commission, see page 11); another student could give further explanation, using ecological and social dimensions of SD. Therefore, five out six students could not explain the whole meaning of SD. This finding was contradictory with the result of statement 9 (see Figure 5-1-b), in which 60% students agreed and 16% strongly agreed with the three dimensions of SD. In this case, this thesis author would like to use the result of in-depth interviews, because of two reasons. Firstly, interviews with four students at the first stage of constructing the questionnaire already gave an impression of lack of understanding the whole meaning of SD. Secondly, as stating before in this thesis (see page 22), there is a problem in using closed-ended questions. Respondents may not express their real answers, rather they could express just the extent to which they agree or disagree with the opinion of the researcher.

This finding is similar to the study by Davis et al. (2003) carried out at two institutions, Northern Arizona University and the University of South Carolina. The study showed that students at both universities were less confident with their understanding of SD; they were less aware of the whole three dimensions of SD, and mostly defined SD from ecological perspective (Davis et al., 2003:172).

Regarding question 2: “Do you want to learn about SD at your program? Why yes? /Why no?” all students said “yes”, and their answers also varied (see Table 5-4).

Table 5-4: Students’ reasons for learning about SD

Reason to learn about SD	Students' explanation	Answer
To obtain knowledge	I want to know about SD because I have heard about this term; however, I have not yet understood what it really means, and I am interested in knowing this new knowledge	2
	I want to know what Swedish perspectives towards SD are	1
To apply in daily life	I think SD knowledge is useful for my daily life. For example, how to consume less energy, and how my activities will affect the environment and other people, ect.	3
To have advantage at work	I think having SD knowledge is a plus for in my future job	3
Other	I think SD courses should be easy to get passed	1

The last reason does not sound very serious about learning for SD. However, it is also an “interesting” reason why students take sustainability courses.

As a whole, all the students said “yes” for SD into programmes and, they could give very clear reasons why they would like to learn about SD. Therefore, the result showed a high willingness among students towards inclusion of SD into their programmes. This result

was consistent with result from statement 10 (see Figure 5-1-c). This finding was likewise consistent with the result of the study carried out at two institutions, Northern Arizona University and the University of South Carolina, in which students at both universities showed a great expectation to more SD knowledge integrated into education at their university (Davis et al., 2003:175)

Regarding question 3 “How do you want to learn about SD?” answers can be categorized into 2 groups: studying about SD through campus activities and courses (see Table 5-5).

In this result, most of the students said SD courses should be compulsory. This result was different to the result of statement 13 (see Figure 5-5) in which many students preferred to have optional courses. The most common reason for compulsory courses, according to interviewees, was to ensure the attendance of all students, and to ensure that they would get SD knowledge before graduating. However, from the results of both interviews and in the survey (statement 13), it could not be recorded a particular type of method for organizing SD lessons and courses which were agreed by the majority of students. This thesis author understood it as there are many ways to teach and learn for SD, all should depend on specific situations. However, as an interviewee said if the educational activities are interesting, students will take part in those educational activities. What should be noticed from the results was that students would like to have education for SD (as the majority of them chose ESD characteristics, see Figure 5-2, Figure 5-3 and Figure 5-4), and there were many ways of doing it.

Table 5-5 Students’ opinions on how to learn about SD

How to learn about SD?	How much?	Organization of lessons	Further explanation
Campus activities : Workshops , seminars (3 answers)	At every semester (3 answers)	Optional and practical (3 answers)	If the activities are interesting, students will take part in. There is no point in making it compulsory. Workshops can be done by students with supervised by qualified teachers. Seminars could be about real cases, current and hot issues are going on around the world. The whole meaning is to make it useful; for example, how to consume less water, electricity, how to choose products which are friendly to the environment, ect.
A separate compulsory course (1 answer)	A 4-credit point-course for the whole programme	Theoretical and practical knowledge combined	Should be a minor course only with 2 credit points for theory and 2 credit points for practicalities (especially <i>field</i> trip to study about practical things linked to the theory presented at classroom).

Table 5-5 Students' opinions on how to learn SD (cont.)

How to learn about SD?	How much?	Organization of lessons	Further explanation
Separate compulsory courses (1 answer)	About 2-3 courses for the whole programme	Knowledge about practical issues which help in changing students' behaviors	Courses should be compulsory; otherwise, no one will take those courses! The courses are not only to give knowledge, but most importantly to change students' behavior as well.
Develop from existing courses (1 answer)	Choose some existing courses are suitable to include SD	Compulsory and practical	Therefore, those courses should make them understand the impacts of their activities both at home and at work.
Integrate in whole program (1 answer)		Theory and real cases in reality	SD should be integrated into whole programme because natural, social, and economic aspects should not be separated. Lessons should be organized in the way that real things will be brought into class. Students should be exposed to different ideas and real experience so that they can make their own theory, or compare different theories; thereby being able to apply theories into reality by themselves when needed.

One common word which was very clear from all interviewees' answers was "Practical". Although some interviewees mentioned the importance of theoretical component, they also emphasized that theoretical knowledge should be connected to real things as well. This result was consistent with the result of statement 15, in which field trips, class discussion and case studies were the most favorite means of teaching and learning for SD (see Figure 5-7)

Moreover, the results of statement 15 (see Figure 5-6 and Figure 5-7), other methods suggested by students (see page 32) and results from interviews, especially one example of an interviewee: "One example is to use "simulation" method, in which real issues will be given and role-play allows students to part take into different roles and discuss, experience, and draw their own conclusions." all implied a request for substantial student participation in the process of teaching and learning about SD.

Regarding question 4 “Do you think LU will gain or lose a competitive advantage over other universities around the world when including SD into all programmes?” half of the students showed reluctance to give definite answers. The students finally all agreed that LU could gain competitive advantage when including SD into its programmes; however, the levels of agreement were different. A half of them stated that it “may” happen; the rest said it “will surely” happen. The following is a brief summary of reasons given by students:

- ✓ SD is becoming well-known and students should be curious to know about this new knowledge
- ✓ Companies and organizations have realized the importance of an environmental management policy. Many companies and organizations have been established and implemented environmental policies. As an employer, he or she will expose to those policies in some certain ways. Therefore, knowing about environmental and sustainable development is a plus for students when entering the workplace.
- ✓ Companies and organizations are realizing the need to have sustainability thinking, especially companies prioritizing research activities. University graduates with sustainability knowledge could help in bringing sustainability knowledge into company activities and products; for example, develop a new product which can mitigate the oil crisis.
- ✓ Sustainability knowledge is not only necessary for the workplace but also daily lifestyle. If LU makes all programmes contain sustainability components, students graduating from LU can become more sustainable in his lifestyle and also can influence other people. Therefore, it is a positive sign from a competitiveness point of view.

Overall, all students could come to one reason or several reasons why LU would gain positive competitiveness internationally. Reasons ranged among categories similar to result of question 2 (see Table 5-4), which were: giving chance to circulate new knowledge, giving chance to be sustainable in daily lifestyle, and giving advantage at the workplace. This result again showed a good sign of acceptability of SD into their programmes.

5.3 Results from interview with heads of programme

Part one: awareness and motivation

Regarding question 1 “Have you ever heard about the “Lund University environmental and sustainable development policy?” answers were:

“Yes, I have”: 2 answers

“No, not yet”: 3 answers

“Yes, I have heard about it” (however, they did not know all about it, what exactly the policy says): 2 answers

There were some difficulties in getting interviews with heads of programme; therefore, the sample was small (see Table 5-6). However, the researcher tried to have opinions of programme directors or in-charge person in all field: economic, law, social science, and engineering. There were two interviews conducted via e-mail, the rest was done through in-person interviews.

Table 5-6 Position of Interviewee and how to conduct the interviews

POSITION OF INTERVIEWEE	HOW TO CONDUCT THE INTERVIEW
Head of Master Programme in Society, Science and Technology	In-person
Head of Master Programme in European Affairs	In-person
Head of Social Faculty, answering questions for: LUMID Programme; Master Programme in European Affairs, Global Studies, Gender Studies, and Development Studies	In-person
Head of Master Programme in Maritime Law	In-person
Contact Person of Faculty of Engineering, LTH	In-person
Head of Master Program in International Marketing and Brand Management	E-mail
Head of Master Programme in Finance	E-mail

Regarding question 2 “Do you see any motivation behind this new policy?” answers were categorized into four large groups (see table 5-7). Most of the interviewees could give their ideas about motivation behind the new policy which showed a promising potential for willingness to change. However, there were two answers which were not belonged to any categories in Table 5-7, and showed lack of willingness to change:

“I think this new policy will not change anything in our programme. All of our courses are dealing with peace and democracy, which are foundation for SD; therefore, there will be no big change in the programme”

“Difficult to answer because this requires a better understanding of the issue”

In the first answer, the idea showed a thought that programme directors could possibly use as a reason to resist change by saying they already have SD issues in their programmes. However, education for SD is a continuous process; with essential planning, implementation and evaluation processes; not a final destination. Therefore, this answer was considered as lack of motivation to change to include SD into his/her programme. In the second answer, it showed a lack of holistic understanding of SD. These two cases indicated a need to raise awareness of SD among programme directors.

Part two: how far have those programmes reached concerning inclusion of SD into education?

In part two of interviews with heads of programmes (see Table 4-3), there were four interviewees stated that they were on the way of embedding SD into their programmes.

Two of them said they were using case studies to illustrate and discuss sustainability issues in some courses; one of them stated they have certain “sustainability” courses; and one of them stated SD issues were highlighted in different courses of the whole programme by teachers who were informed that they should include SD issues into their lessons. In the last answer, the interviewee also mentioned that SD issues do not necessarily appear in all courses; at the end of the programme, student knowledge of SD issues will be judged through their final papers or exams.

Table 5-7 Interviewees’ opinion on motivation behind the LU environmental and sustainable development policy

MOTIVATION BEHIND THE POLICY	ANSWERS FROM RESPONDENTS
Education and research encouragement (5 answers)	<ul style="list-style-type: none"> ✓ Research and education activities towards SD will be encouraged 1 answer ✓ Encourage students writing thesis about SD 1 answer ✓ Encourage more focus on three dimensions of SD because the major subjects of our programme are close to those dimensions of SD 1 answer ✓ SD is a matter of global importance that will have a major impact on almost all industries in the future. Therefore, it is important to have SD into programmes 2 answers
Responsibility/Commitment (3 answers)	<ul style="list-style-type: none"> ✓ Responsibility for the environment, the next generations, and the society 1 answer ✓ Commitment to general policies as a state employees 1 answer ✓ Commitment to other organizations and programmes 1 answer
Pressure from outside (1 answer)	Companies hiring our students after they graduate ask for competence related to SD 1 answer
Increase in students’ awareness (1 answer)	It is my impression that relatively few students realize the importance of competence in knowing SD before they graduate 1 answer
Positive image (1 answer)	SD could provide a more positive general image of the programme 1 answer

Three over seven interviewees did not know about LU environmental and sustainable development policy. The whole three dimensions of SD did not appear in their programme at the moment; and just one of them showed an interest in the idea of including SD into his/her programme.

Therefore, the result showed different stages in the process of inclusion of SD in different programmes, according to the five stage process of the adoption of a new idea (see Table 4-4), in which:

- ✓ 4 cases: at evaluation stage
- ✓ 1 case: at interest stage
- ✓ 2 cases: even not yet at awareness stage

Part three: barriers and possible ways to reduce/overcome

Regarding question 3: “What are the most difficult barrier(s) your program have to face (or are facing) if you include sustainable development into your program?”(see Table 5-8)

Table 5-8 Barriers/Difficulties towards inclusion of SD into education

Barriers/Difficulties	Answers from respondents	
Lack of resources (7 answers)	Lack of money, time, teachers, and/or human resources	6 answers
	Lack of material	1 answer
Learning outcomes (2 answer)	Ensure learning outcome, that students can integrate SD with the rest of their knowledge	1 answer
	SD is too broad concept; thus sometimes it is very hard to decide what is relevant for a particular course	1 answer
No pressure from outside (1 answer)	Lack of pressure from companies/organizations	1 answer
No barriers at all (1 answers)	We already have SD into our major courses, there will be no big change needed in our programme	1 answer

The most significant barrier was lack of resources, basically the question of money and time. Some interviewees stated that there were many policies at the university which they were supposed to know and work on it; however, resources (in terms of time, money and human resources) are not sufficient. There is also a problem of allocating resources on various courses, and dealing with competition among teachers and departments for course

points. If a new proposed knowledge unit is not naturally a part of an existing course, then there is resistance to allowing it in³.

Regarding question 4 “How do you think those barriers can be reduced/overcome?” the most common answer for this question is “going into the specifics” (this was mentioned by four interviewees). Case study with respect to SD which is relevant to the programme was the most common method mentioned by interviewees. In the study of Davis et al. (2003), case study is also one of the most common methods used to incorporate the concepts of SD into education at Northern Arizona University and the University of South Carolina. According to the study, assigned readings, class discussions, class projects, and case studies were the most common methods of introducing SD into education at those universities (Davis et al., 2003:174). This result was also in understanding with the result of a study across higher educational institutions in England by Martin et al. (2006) about current teaching orientations for ESD, in which “experiential learning, reconnecting to reality” was strongly supported by respondents, because this method gave students opportunities to get hands-on experience on complex sustainability issues, one way to avoid “reductionist” approach in many educational systems (Martin et al., 2006:63&64).

This finding was also interesting because the most common method mentioned by heads of programmes was also one of the most favorite means of learning about SD agreed among students (see Figure 5-7).

One interviewee suggested that SD cannot be address in all courses, but just some courses of the programme. However, they can evaluate student knowledge towards this issue by judging their final papers or exam.

Regarding question 5 “Have you ever received order/pressure from outside (organizations, business, ect.) that you should give sustainability knowledge for your students?” all of the interviewees said “no”; and there was only one case, the answer was “yes”. It should be noticeable that this was also one reason for lack of interest and willingness to include SD into programmes among programme directors.

As stating above, there are some problems with getting interviews with heads of programmes, therefore, the sample was small and results from interviews would not show deep and sufficient information. Regarding further research, these results should be consulted with opinions of heads of programmes as well as academic staff who are in charge of designing programmes. The interview sample should include further members of programmes who are involved in the process of inclusion of SD into education.

³ This information was also obtained from informal notes taken during a meeting about ESD at LU among contact person (in-charge person) in various faculties at LU and Head of Team Environment and Safety, on 26 April 2007

6 Conclusions

Answers to research questions and hypotheses

For students

What are students' attitudes towards sustainability?

H1: Students do not strongly support sustainability

Answer: Yes, they do strongly support sustainability

What is the current understanding of sustainable development among students?

H2: Students do not understand the whole meaning of SD

Answer: No, they do not understand the whole meaning of SD

Are students willing to include sustainable development knowledge into their programme?

H3: Students are not willing to include SD knowledge into their programme

Answer: Yes, they are willing to include SD knowledge into their programme

How do students prefer to learn about sustainable development?

The majority of students prefer to have ESD at their programme, a small minority of students preferred Fact-based Environmental Education and Normative Environmental Education. Students would like to study for SD through real cases which can bring real things into class. Field trips, class discussion and case studies were the most favorite means of teaching and learning for SD perceived by students.

For heads of programmes

What is the current awareness of the new policy among heads of programmes?

H4: All of heads of programme know very well about the new policy

Answer: No, not all of them know well about the new policy

How far have programmes reached in the inclusion of SD into education?

Answer: there are different stages in the process of inclusion of SD in different studied programmes as following:

- ✓ 4 cases: at evaluation stage
- ✓ 1 case: at interest stage
- ✓ 2 cases: even not yet at awareness stage

(According to the five stage categories, consult Table 4-4 for more information)

Are heads of programmes willing to make change at their programmes?

H5: All of programmes heads are willing to include SD into their programmes

Answer: No, not all of them. However, four over seven interviewees stated they were willing to do so

What are considered to be the most important barriers by heads of programmes?

Answer: The most significant barrier is lack of resources, basically the question of money and time. It is also the problem of lack of awareness of SD

How could such barriers be reduced or overcome?

Answer: “Going into the specifics”, using case studies to illustrate the complexity of reality.

Recommendations

The need to raise awareness of ESD among academic directors and teachers

From the results of this study, one of the first actions LU should do is to raise awareness among academic directors and teachers. They should be well aware of the new policy in order to let sustainability become fundamental priority for the university.

The need to increase student participation

One important keyword of ESD is “pluralism” which means students’ opinions and preferences are taken into educational activities as well (Sandell et al., 2003:176). If a university fail to do so, sustainability knowledge could be found irrelevant by students, thus will not be applied into reality

The need to create space for pedagogical transformation

LU should create space for the transdisciplinary approach to be supported and encouraged in educational and research activities. The space for transformation mainly means committed time for evaluation, reflection, dialogue, and implementation. This space should also allow the transformation of students, teachers and academic directors, in such a way that they can work together and strengthen the interactions among them (Moore, 2005:337).

Cooperation with all stakeholders

ESD is a huge task. However, educational institutions, luckily, do not have to do this task alone. By creating and improving connections and interactions with all stakeholders, educational institutions could work together with non-formal educational stakeholders (NGOs, companies, nature centers, ect.), and informal educational stakeholders (local television, newspaper, ect.) in order to move forwards to ESD because ESD is a life-long process (McKeown, 2002: 16 & van Dam-Mieras, 2006:13). This argument was likewise supported by Hansen & Lehmann (2006) who emphasized the importance of universities, business and civil society (Hansen & Lehmann, 2006:828). This model is also recommended by Ferrer-Balas et al. (2006) for the Technical University of Catalonia, presented in figure 6-1. Therefore, LU should improve its interaction with all the stakeholders to utilize the benefit from outside world in order to progress in the process of inclusion of SD into education.

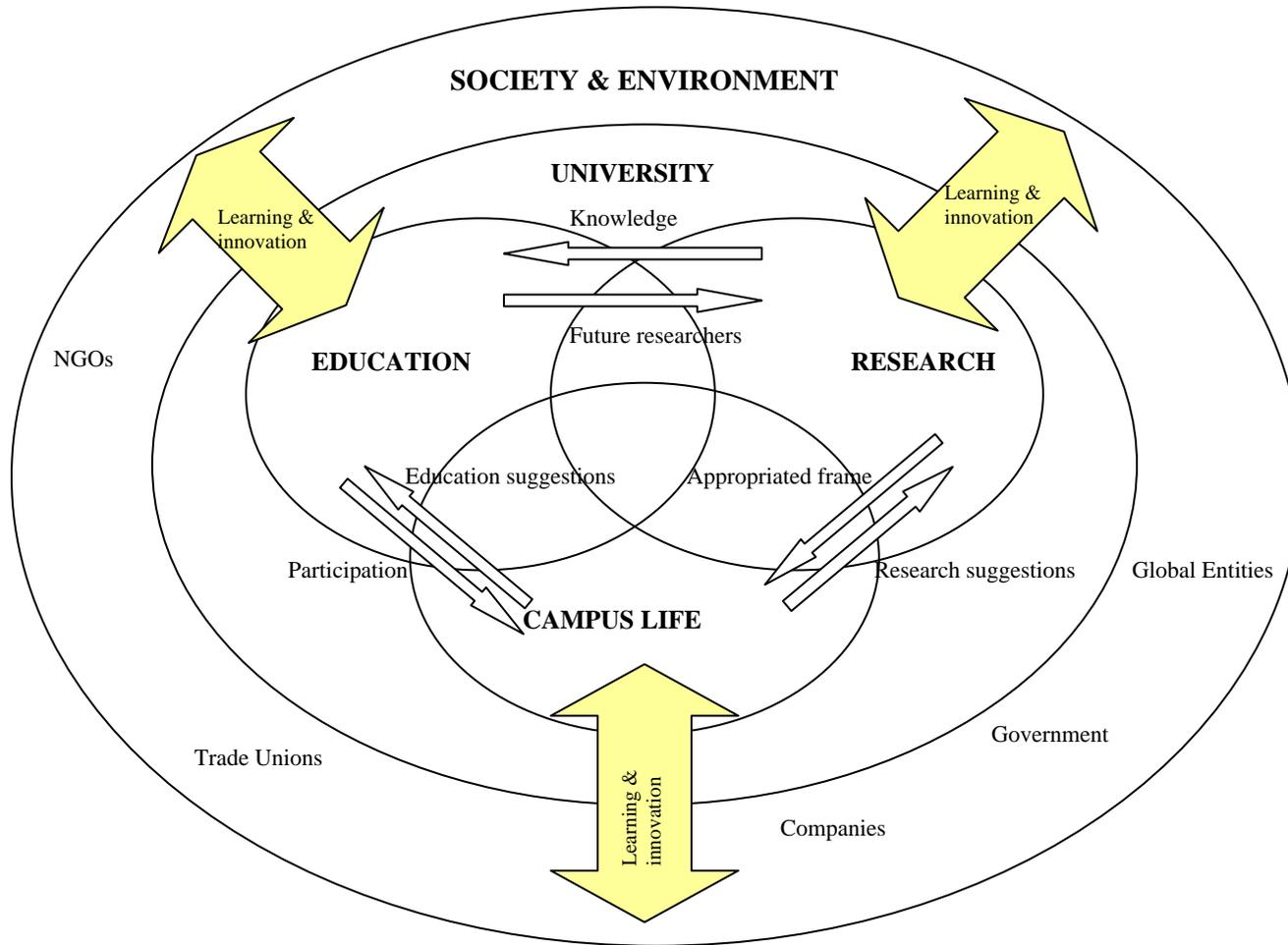


Figure 6-1 Proposal model for a new role of a university with respect to SD

Source: Ferrer-Balas et al., 2006:28

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Appendix

Questionnaire for students

*Lund University is planning to include **Sustainable Development** knowledge into education at all programs. This questionnaire is to understand the current awareness related to this concept, as well as to let students express what type of Education for Sustainable Development they prefer to have at Lund University. The answers will remain anonymous.*

The following questions are for you to give your opinions about these statements:

(Please choose ONE answer each question)

1. We owe a duty to our children and grandchildren to preserve the environment

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

2. We have a duty to other people and to our families

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

3. I want my children and grandchildren to see and enjoy those things I enjoyed as a child

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

4. We owe a duty to animals and nature; they don't exist just for our enjoyment

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

5. The earth and nature are fragile and we can easily cause irreversible damage

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

6. We have no choice: we have to protect the environment or we will destroy the human race

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

7. Without economic growth, a country will not be able do the things it wants to do

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

The next 3 questions are for you to give your opinions about Education for Sustainable Development

8. Education for Sustainable Development simply means Education for Environmental Protection

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

9. Another concept of Education for Sustainable Development has developed, in which Education for Sustainable Development should include three dimensions: environmental protection, economic well-being, and social justice. How would you agree with this concept?

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

10. How would you agree if THAT concept of Education for Sustainable Development (in question number 9) will be included into your program?

- (1) Strongly agree (2) Agree (3) Neither agree or disagree
(4) Disagree (5) Strongly disagree

These following questions are to explore which types of Education for Sustainable Development YOU PREFER to have in your program at Lund University

(Please choose ONE answer each question)

11. The goal of Education for Sustainable Development is:

- A. Students *get knowledge* of environmental issues by studying scientific facts
- B. Students *actively develop* environmentally friendly behaviors based on scientific knowledge, mainly ecological knowledge
- C. Students *actively and critically evaluate* many different perspectives of environment and development issues

12. Central subjects of Education for Sustainable Development are:

- D. Natural sciences
- E. Natural sciences and social sciences
- F. Aspects of ecological, economical, social science as well as ethical aspects

13. Lessons and materials for Education for Sustainable Development should be given by:

- A. Providing *new separate optional courses* in my program
- B. Providing *new separate compulsory courses* in my program
- C. Include in *some existing courses* in my program

14. Main teaching method is:

- D. *Knowledge is given* to students by teachers
- E. *Teachers give knowledge and students actively contribute* to knowledge as well
- F. *Critical discussion* among students and teachers

In this last question:

15. Please choose YOUR FAVORITE MEANS of teaching and learning about sustainable development, CHOOSE AS MANY AS YOU WANT. Then UNDERLINE 3 ITEMS which you best favor

- () Videos
- () Story telling
- () Speakers
- () Problem-based
- () Field trips
- () Class projects
- () Class discussions
- () Case studies
- () Assigned readings
- () Others:

Please go back again and check whether you have answered all the questions.

If you would like to receive results of this study via email, please write down your email address:

All of your comments are welcome, please contact: Phan Truc Mai.

Email: phtrucmai@yahoo.com

THANK YOU VERY MUCH