From Education to Action: 
The Effectiveness of CEMUS Courses 
in Promoting Behavior and Action 
Towards Sustainable Development

Misol Kim
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Abstract

This thesis studied four CEMUS courses offered in spring 2011. The purpose of this study was: 1) to measure CEMUS students’ self-reported behavior and action as well as behavior intention towards sustainable development; 2) to analyze different factors and barriers to their behavior and action; 3) to analyze course coordinators’ knowledge and perspectives about behavior change and action towards sustainable development; and 4) to analyze each course’s impact on students. Finally, this thesis discusses how education can be improved to foster behavior and action towards sustainable development. This study used both qualitative and quantitative methods. According to the results, most CEMUS students were willing to recycle; to switch off electricity when it’s not needed; and to travel by bicycle or public transportation instead of by car. On the other hand, fewer students had a willingness to pay for environmental costs and to cut down water consumption and waste. Among the opportunities for indirect action, it was political participation and working within the field of sustainable development (SD) that were most preferred. In contrast, much fewer students were willing to avoid purchasing products from companies with poor track records on CSR, to participate in voluntary work related to SD and to donate money for social or environmental causes. The two most frequently perceived constraints for behavior change among students were a lack of money and obstructive social norms. As a course outcome, four out of six coordinators expect students to take action afterwards but there is a lack of knowledge on how to encourage students to behave and act more sustainably. Based on the results, this thesis discussed what kinds of learning methods can be applied in CEMUS and ESD. It was concluded that education should focus on a specific domain and a small spatial scale, and assign project assignments in which students communicate and interact with stakeholders. Such an approach will help to approach the goals of Education for Sustainable Development (ESD). CEMUS could also implement the theory of locus of control, emotional involvement and four different kinds of knowledge in their education in order to improve the effectiveness of CEMUS courses when it comes to promoting behavior and action towards SD.

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Acronyms

CEFO  CEMUS Research Forum
CEMUS  Center for Environment and Development Studies
CSD Uppsala  Center for Sustainable Development at Uppsala University
CSR  Corporate Social Responsibility
UNCED  United Nations Conference on Environment and Development
UNDESD  United Nations Decade of Education for Sustainable Development
UNESCO  United Nations Educational Scientific Cultural Organization
EE  Environmental Education
EFA  Ecological Footprint Analysis
ESD  Education for Sustainable Development
IMF  International Monetary Fund
IUCN  International Union for Conservation of Nature and Natural Resources
MDGs  Millennium Development Goals
SD  Sustainable Development
SLU  Swedish University of Agricultural Sciences
WCED  World Commission on Environmental and Development
WSSD  World Summit on Sustainable Development

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1. INTRODUCTION

Our socio-economic systems, way of life, relationship between humans and nature, international relations, and so forth have resulted in urgent environmental, social and economical challenges. It is hard to envision a sustainable future without rapid transformation. Through individual choices, behavior and action at different levels, our world can be shifted towards sustainable development (Collier and Smith, 2009). Education has an integral role in promoting change because of its large impact on humans. The concept of Education for Sustainable Development (hereafter ESD) has been developed to implement the sustainable development goal; the goal of ESD is to empower people to change their behavior and to take action for sustainable development. According to the International Implementation Scheme of the United Nations Decade of Education for Sustainable Development (hereafter UNDESD), “the basic vision of the UNDESD is a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation.” (UNESCO Education Sector, 2006, p.4)

To fulfill the goal of ESD, ESD has been designed to foster awareness of sustainable development issues; to acquire knowledge and skills needed for sustainable development; and to get attitudes and values underpinning sustainable development (Shallcross, 2005). However, a great amount of research has shown that improved knowledge, awareness and attitudes towards sustainable development do not directly lead to action and behavior change. Behavior change is a very complex process and is difficult to comprehend because various factors affect action and behavior. A number of theories have been developed about the gap between pro-environmental action on the one hand and knowledge, attitudes and other factors on the other hand. Even though there is no definitive answer to explain this gap, reviewing theories and applying them to current educational curricula can be very effective in improving ESD to realize its aim. Therefore this study aims to: 1) measure CEMUS students’ self reported behavior and action as well as future intention in regard to sustainable development; 2) analyze different factors and barriers to their behavior and action; 3) analyze course coordinators’ knowledge and perspectives about behavior change and action towards sustainable development; and 4) analyze course impact on students. Ultimately, this thesis discusses how education can be improved to foster behavior and action towards sustainable development.
2. BACKGROUND

2.1. The concept of sustainable development

The concept of the sustainable development departs from the post modern consciousness of the limit of progress. In 1972, the Club of Rome published a book named “The Limits to Growth” (Meadows et al., 1972). This book mainly argued that we cannot continue our technological development and societal increase as we have for the last 200 years. It warned that exponential growth of industrial production, energy consumption, food production and so forth will end with catastrophe unless we take mindful action. It also raised the question of what we should do to prevent such an overshoot. Sustainable development started to be discussed in the following two reports: The World Conservation Strategy (1980) of the International Union for Conservation of Nature and Natural Resources, and Our Common Future (1987) of the World Commission on Environment and Development (hereafter WCED). The World Conservation Strategy (IUCN, 1980) defined development as “the modification of the biosphere and the application of human, financial, living and non-living resources to satisfy human needs and improve the quality of human life.” Additionally the report states that “for development to be sustainable it must take account of social and ecological factors, as well as economic ones; of the living and nonliving resource base; and of the long term as well as the short term advantages and disadvantages of alternative actions.”

The most common definition of sustainable development was written in the “Our Common Future” report of the WCED (Brundtland, 1987, pp.43-44).

Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs [...] The satisfaction of human needs and aspirations is the major objective of development. The essential needs of vast numbers of people in developing countries—for food, clothing, shelter, jobs—are not being met, and beyond their basic needs these people have legitimate aspirations for an improved quality of life. A world in which poverty and inequity are endemic will always be prone to ecological and other crises. Sustainable development requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life.

Sustainable development includes two contradicting interests; Sustainability connotes the limit to growth and development indicates the need of growth mainly for the developing countries (Mitcham, 1995).

The concept of sustainable development is contradictory as well as ambiguous. Understanding the three main dimensions: ecological, social, economical, is helpful to clarify this concept. For ecologically sustainable development, biodiversity and carrying capacity should be maintained, and resources and ecosystem should be well managed. For economical sustainability, the
efficiency of resource use and the impact of consumption and production should be considered. Social equity, democratic participation and institutional development should be encouraged for social sustainable development.

2.2. Historical background

In the beginning, the environmental movement was represented by conservation and preservation movements. There was a movement against waste dumping and tanneries in the United States in the mid 1730s. The conservation movement expanded in the 1800s, where Henry David Thoreau and John Muir were central figures contributing to the environmental movement. As an author and philosopher, Henry David Thoreau created various books, poems, articles and essays. He lived a simple life in nature and wrote reflections of his life in a book called Walden, published in 1854 (Thoreau, 1971). He argued that an individual should resist civil government in moral opposition to an unjust state, in one of his essays named Civil Disobedience (Thoreau, 1987). His life and work affected many public figures such as Mahatma Gandhi and Martin Luther King, as well as future environmental movements and civil rights movements. John Muir founded the Sierra Club, one of the oldest and most influential environmental organizations in the United States. He also contributed a lot to the conservation and preservation movements in USA (Kovarik).

In 1863, the first modern environment act, named the Alkali Act was passed in Britain to regulate air pollution caused by industrial processes. National parks began arriving around the turn of the 19th century. Sweden for example introduced national parks in 1909 and the National Park Service was founded in 1916 in the United States (Sandell et al., 2005). Yet these movements were generally individual examples in only a few scattered locations. It was not until much later in the 20th century that the environmental movement gained real momentum. In 1962, ‘Silent Spring’ by Rachel Carson was published. The book argued against the harmful effects of pesticides like DDT on humans and the environment, particularly on birds (Carson, 2002). This book raised public concern about pesticide use and contributed to a ban on the use of DDT in the US in 1972.

The first international environmental conference was held by the United Nations in Stockholm in 1972. The motto of this conference was “Only one earth” and World Environment Day was established (Breiting, 2003, p.7). 20 years later, shortly after the arrival of the concept of sustainable development (as described earlier), the much larger United Nations Conference on Environment and Development (UNCED) was held in Rio de Janeiro, Brazil. Here, Agenda 21 – the 21st Century action plan for environment and development – was adopted. Agenda 21 recognized each nation’s responsibility to adopt a model of sustainable development as well as its right to pursue social and economic progress. One of the chapters of Agenda 21 discussed
education as one means of implementation. It stated that “education 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” (UN Department of Economic and Social Affairs Division for Sustainable Development, 2009). The Rio Declaration addressed the urgency of change in our current lifestyle, consumption and production patterns.

In 1997, the Conference on Education for a Sustainable Future was held by UNESCO (United Nation Educational, Scientific and Cultural Organization) and a holistic approach for sustainable development was stressed (Breiting, 2003, p.7).

The Millennium Development Goals (MDGs) developed by the General Assembly of the United Nations are to be achieved by 2015. One of eight goals is to ‘ensure environmental sustainability’. Other goals such as ‘eradicate extreme poverty and hunger’, ‘promote gender equality and empower women’, and ‘develop a global partnership for development’ are also directly or indirectly related to sustainable development.

The World Summit on Sustainable Development (WSSD) or Earth Summit was held in Johannesburg in 2002. It evaluated ten years of progress on Agenda 21 and stressed that the economic, social and ecological dimension need to be integrated for sustainable development (Ministry of Education and Science, 2004, p.8). In chapter 36 of Agenda 21, reorienting education towards sustainable development along with increasing public awareness and promoting training was written as one of the means for implementing Agenda 21.

That same year, the United Nations General Assembly proclaimed a United Nations Decade of Education for Sustainable development 2005 -2014 (UNDESD). As stated earlier, the Framework for the UNDESD International Implementation Scheme, stated that “the vision of education for sustainable development is a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation” (UNESCO Education Sector, 2006, p.24). The following year, environmental ministers of Europe, Canada and the United States gathered in Kiev, Ukraine and agreed to develop an education strategy for sustainable development. They agreed the overall aim of education for sustainable development is “to empower citizens to act for positive and environmental change and this implies a process-oriented and participatory approach” (Ministry of Education and Science, 2004 p.10).

The UNESCO World Conference on Education for Sustainable Development – Moving into the Second Half of the UN Decade was held in Bonn, Germany in 2009. During the conference, participants exchanged good practices on ESD from different regions and recognized different regional, national and cultural needs, priorities and responsibilities. This was summarized in the
Bonn Declaration, an outcome from the conference (UNESCO & federal ministry of education and research, 2009).

In 2009 December, the UN General Assembly decided to hold the United Nations Conference on Sustainable Development (UNCSD) in 2012, also referred to as ‘Rio+20’. The objective of the conference is “to secure renewed political commitment for sustainable development, assess the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development, and address new and emerging challenges” (United Nation, 2009).

2.3. Environmental education and education for sustainable development

Education for sustainable development stems from environmental education. Environmental education began to be taught in schools in the 1960s. Teaching was mainly focused on improving the scientific environmental knowledge of students. Environmental problems were expected to be solved by doing research and disseminating more information to the public. An early viewpoint of the relationship between humans and nature was that nature is separate from humanity and humans need to control nature. From 1980s, environmental problems have been considered as the result of a conflict between human society and the laws of nature. So, teaching was based on developing environmentally friendly values. People started to recognize that humans are part of nature and should thus adapt to the law of nature (Sandell et al., 2005). ESD emerged in 1990s with the Rio conference and Agenda 21. Environmental problems started to be regarded as a problem of political and moral issues. ESD covers environmental education and further involves the issues of economic and socio-cultural issues. Environmental issues include natural resources, climate change, rural development, sustainable urbanization, disaster prevention and mitigation. Socio-cultural issues include human rights, peace and human security, gender equality, cultural diversity and intercultural understanding, health, HIV/AIDS, and governance. Economic issues include poverty reduction, corporate responsibility and accountability and the market economy (UNESCO Education Sector, 2006). ESD is not just a mere conversion of environmental education with social, economic and human development concepts. These different disciplines need to be integrated in a holistic and interdisciplinary way (Hopkins et al., 1996).
3. THE CENTER FOR ENVIRONMENT AND DEVELOPMENT STUDIES AND COURSES

CEMUS, the Center for Environment and Development Studies was established in 1996. This center is under the center for sustainable development (CSD) at Uppsala University and Swedish University of Agricultural Sciences (SLU) in Uppsala, along with the Baltic University program, Uppsala water center and collegiums for development studies at Uppsala University. The board of CEMUS consists of the representatives from every Faculty of Uppsala University, representatives from SLU and a number of students. “The mission of CEMUS is to facilitate and encourage as much knowledge gain, as much critical thinking, as much reflection as possible and to make it easier for students to act on these insights if such an urge arises.” (Hald, 2011, p.28)

3.1. CEMUS background

CEMUS originates from one course named ‘Humanity and Nature’. In the early 1990s, a few students found that the university is short on courses with an interdisciplinary approach regarding global survival issues. They also recognized the importance of students’ participation and interaction across disciplines regarding global survival issues. So, they came up with an idea of an interdisciplinary course for all students regarding these issues. They made a course proposal and send it to the University board with the guidance of one professor and support from senior researchers at both Universities. This course proposal was accepted by the Vice-chancellor and the course, ‘Humanity and Nature’ was offered from the fall of 1992. The students who had suggested the course proposal coordinated the course and moderated the discussions in the course.

Since then, more and more courses have been developed by CEMUS and nowadays about 20 courses are provided by CEMUS every year in Swedish or English. Four courses were provided in English in spring 2011 and this thesis is mainly focused on these four courses. The detail of these courses will be described in the following sections 3.2.-3.5. The descriptions of the courses are mainly from the course homepage (CEMUS). CEMUS courses are made with cooperation of coordinators, course work groups and the organization at CEMUS. Course coordinators develop the general structure of the course, assignments and invite guest lecturers. They also organize course seminars and deal with the administration of the course. University students can be employed as course coordinators. Course work groups give suggestions and feedback to the course coordinators’ work. Course work groups consist of researchers, teachers and practitioners from different disciplines. The organization at CEMUS supports work of course coordinators. The organization includes a director of studies, an educational coordinator, project assistants, and a program director.
CEMUS also provides a meeting place for people to do extracurricular activities or group projects. CEFO (CEMUS Research Forum) was established in 2003. It provides research seminars and several doctoral courses.

### 3.2. Actors and strategies for change towards global sustainabilities

Since 2010, this course has been provided in the spring semester. The course is a 7.5 credit course and took place between January 17 and June 2 2011. About 80 students took this course in spring semester 2011. In this course students investigate key actors working today within the field of SD and their strategies for achieving SD. Students also study power relationships between these actors, risks and also limitations which these actors face. This course throws questions to students about what kind of critical thinking is necessary to assess the effectiveness of their chosen strategies and what responsibilities individuals have in creating a more sustainable world.

The course consists of lectures and three mandatory workshops. In workshops students explore issues and their interconnectedness by looking at specific actors and strategies. In the workshops, students work mostly in groups focusing both on general questions as well as on specific issues. Role-plays, simulations, group discussion, exercises and other cognitive tools are used to increase understanding and stimulate creative and critical thinking.

The course assignments include workshop tasks, reading course literature (see appendix 4) and writing a reflection on what they have read. There’s also a final project including a written paper and presentation at the end of the semester.

### 3.3. Sustainable development - project course

Since 2008, this course has been provided every semester. The course is a 15 credit course, and for the spring semester 2011, it took place between January 17 and June 2. About 17 students attended at that time. In this course, students plan and manage a project in the area of sustainable development. The project can be done in group or individually.

On completion of the course, the student should be able to:

- thoroughly describe a delimited part of the sustainability challenge;
- plan, carry out and present a project work that applies theoretical knowledge and on attributes to a sustainable development;
- demonstrate good ability to work independently;
- account for and evaluate the practical problems that can arise when working with projects;
• account for and critically relate to the practical and ethical dilemmas that can arise when working for sustainable development.

The course consists of lectures, workshops, and compulsory seminars. Lectures and workshops are focusing on different aspects of sustainable development, communication, project management and group dynamics.

In the beginning of the course, students have lectures about the concept of sustainable development, collaborative learning, system thinking, project management and strategies for change. In the beginning to middle of the course, students come up with a project idea and develop a project plan where they define their goals and make a time plan.

Their projects are carried out for two months (March – May). During this period, they have progression meetings and seminars every second week. They should hand in status reports before every progression meeting and assignments for each seminar. Seminar assignments include reading related literature, talking to key individuals or groups and visualizing systematic connections in the area of study.

At the end of the class, students need to turn in the project report individually and present their projects. This year, they presented their project through a project fair. In the project report students analyze the results of the project, in terms of project management and delivery on project goals.

3.4. Climate change leadership – power, politics and culture

This course is new for the spring semester 2011. The course is a 15 credit course and for 2011 it took place between January 17 and June 2, with about 40 students. This course investigates the real meaning of climate change leadership which is often mentioned in both news media and by politicians themselves. From this course students explore what kind of knowledge and skills future climate leaders will need to learn and what kind of political, cultural and psychological resources are lacking in present initiatives.

The course consists of lectures and seminars. In the seminars students explore the topics raised and further explore the issues. Assignments include writing literature reflection, essays, policy documents and taking part in a group project.

Course examination includes a short exam, writing a policy document in conjunction with a group, and a role play examination where students’ experiences and reflection on leadership in action will be the main examination.
3.5. Sustainable design – ecology, culture and human built worlds

This course was also newly provided in spring 2011. The course is a 7.5 credit course and took place between January 17 and June 02 2011. About 60 students participated in the spring semester. With inspiration from ecology and nature, and in-depth discussion of how cultural conditions define human perceptions of the environment, the course tries to reach practical conclusions on how creative design can contribute to a sustainable and inspiring world.

On completion of the course, the student should be able to;

- account for different theoretical and applied design principles and models for sustainable design;
- account for and critically relate to sustainable design from an ethical, cultural and historical perspective;
- critically review different design solutions ecological, social and economical consequences, risks, possible uses and functions in the work for a sustainable development;
- independently apply a specific design theory on a specific challenge within the sustainability field.

The course consists of lectures, mandatory workshops and seminars. From the lectures, students learn basic concepts and perspectives in the area of sustainable design. The major part of the examination of this course is the design project. Students design a solution for a specific challenge within the field of sustainable development, hand in writing assignments and present their project. In the writing assignment, students explain the project process and relate their projects with course literature, lecture and seminars. There are also other writing assignments during the course.
4. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

4.1. Literature review

Much of the literature argued that it is essential to change individual behavior and lifestyle and to motivate collective action for sustainable development (Frisk and Larson, 2011, McKenzie-Mohr, 2000). ESD has an important role when it comes to transforming behavior and lifestyle compatible to sustainable development. The goal of ESD is to encourage transformational change in values, behavior and lifestyle (Rowe, 2007, UNESCO Education Sector, 2006) Also, before the development of the concept of education for sustainable development, encouraging responsible environmental behavior has been regarded as the goal of environmental education (Stapp et al., 1969). This supports that changing individual behavior and integrating this idea in ESD are essential to achieving the greater goal of sustainable development in society.

However, numerous studies have shown that the goal of changing behavior and lifestyle has not been met while general awareness and concern has been improved (Lorenzoni et al., 2007, Darner, 2009). Many researchers argued that the failure is primarily attributed to unproven assumptions that knowledge leads to attitude change which then leads to behavior and action towards sustainable development (McKenzie-Mohr, 2000, Volk, 2003). Even though plenty of studies indicated that knowledge and attitude do not lead to a change in behavior (Kollmuss and Agyeman, 2002), many educators still believe knowledge drives a change in attitude, which in turn leads to behavior change (Simmons and Volk, 2002, p. 7). McKenzie-Mohr problematized this by stating, “most programs promoting sustainable behavior have featured information-intensive campaigns that make little use of psychological knowledge” (p.531). Many governments, NGOs, and educational programs still use information-based approaches e.g. media advertising, distributing brochures and campaigns (Stern, 2000, Barr, 2003, Leiserowitz et al., 2005). Doug McKenzie-Mohr (2000) mentioned that the importance of making knowledge about behavior change psychology accessible to those who design educational programs was overlooked, even though psychology can contribute highly to the effectiveness of educational programs to foster sustainable behavior. In addition, many educational programs have set their main targets to change students’ attitudes and values, but considering that behavior is not directly affected by attitude and values, education should do more than changing values and attitudes (Arbuthnott, 2009).

Many researchers explored why behavior doesn’t flow directly from knowledge, attitude and values. Several researchers reviewed and integrated psychological theories related to behavior and action change towards sustainable development.

Kollmuss and Agyeman (2002) reviewed some of the most influential and commonly used theories explaining the factors and barriers to pro-environmental behavior, and the interaction among the factors and barriers. They mainly focused on individual behavior change rather than
indirect action or common action. Pro-environmental behavior means “behavior that consciously seeks to minimize the negative impact of one’s actions on the natural and built world” (Kollmuss and Agyeman, 2002, p.240). The factors and barriers can be divided into demographic, internal and external; demographic factors include: sex, age, nationality; internal factors and barriers include: motivation, knowledge, awareness, values, attitudes, emotional involvement, locus of control, responsibilities; external factors and barriers include; infrastructure, policy, social and cultural factors, financial situation and so on.

Gifford (2011) discussed three phases of climate-related or environmental inaction. First, genuine ignorance prohibits us from action. Second, even if we are aware of environmental problems, psychological barriers preclude us from effective actions. Third, even though we take some actions, these actions might be ineffective or counterproductive. Gifford divided psychological barriers into seven categories: limited cognition, ideologies, comparisons with others, sunk costs, discrepancy, perceived risks, and limited behavior. He further argued that these barriers can be overcome by “targeted messages, effective leadership, improved technical knowledge, equitable policies, enabling infrastructure, the development of norms, the setting of reasonable goals, in-your-face feedback, the spreading of social norms through social networks, and appropriate personal rewards” (Gifford, 2011, p.298).

Darner (2009) reviewed self-determination theory and discussed how it can be implemented in environmental education. According to self-determined theory, behavior can be divided in two: self-determined behaviors and non-self-determined behaviors. Integrated regulation or intrinsic motivations allow for self-determined behavior. For example, you do something because it is interesting, enjoyable or the behavior is coherent with your internalized value system. Non-self-determined behaviors are determined by identified, introjected and external regulation as well as amotivation. Identified regulation determines behavior that an individual thinks is important personally or is suitable to pursue a personal goal even though the value of the behavior is not integrated. For instance, one can study hard to go to a prestigious university. Introjected regulation determines behaviors that are performed to avoid guilt or criticism or to get an ego boost. External regulation includes rewards and threats of punishment; so people can behave to get rewards or to evade punishments. Amotivation means that an individual doesn’t have any intention to a particular behavior. He argued that environmental education should pursue to change behavior by self-determined motivation because self-determined behavior is longer-lasting and less affected from obstacles or barriers to behavior than non-self-determined behavior. This argument is very different from other research that stressed the importance of social norms or infrastructure. He stated that “motivation resulting from integrated regulation is the goal in the EE classroom because proenvironmental behaviors are self-determined, even when they are not particularly pleasurable” (Darner, 2009, p.44). According to Self-determined theory, three psychological needs should be satisfied to perform self-determined behavior: competence, autonomy, and relatedness (Ryan and Deci, 2000, Darner, 2009). Competence refers to “the
human need to control outcomes and feel effective in bringing about desired outcomes” (Darner, 2009, p.44). Autonomy means “the human need to feel that the origins of the individual’s behavior exist within the individual’s self” (Darner, 2009, p.44). Relatedness “is the human need to feel a sense of belonging to a social group” (Darner, 2009, p.44). To motivate self-determined behavior, education can contribute to satisfying these basic needs of students. For example, assignments that connect students’ own community with environmental problems can improve relatedness.

A lot of research tried to measure citizens’ and students’ behavior and behavior intention towards sustainable development or the environment. Reviewing their results and comparing with the result from this study will be valuable for the discussion. Most studies measured reported students’ behavior and behavior intention with the questionnaire analysis while a few researchers measured it by ecological footprint analysis or observations.

Michalos et al. (2011) compared the general population of Manitoba and a cohort of Manitoba students across grade 6 to 12 (age 10-18) to check their knowledge, attitude and behavior concerning sustainable development. About 14% of the students reported that they have taken a course discussing sustainable development. The major findings from Michalos et al. were that the percentage of both the adult group and student group reporting behavior favorable to sustainable developments were significantly less than that with good knowledge and favorable attitude. This result supports earlier findings of gap between knowledge, attitude and behavior. In addition, the knowledge of the adult group was better than the student group. More than 90% of adults reported that they are recycling while only a small part of adults reported to have other types of behaviors such as volunteerism, purchasing based on company track records and so on.

Skamp et al. (2009b) explored both primary and secondary students’ beliefs about the usefulness of certain actions when it comes to reducing global warming and their degree of willingness to take each action. They have found that “more primary students believed in the effectiveness of most actions to reduce global warming and were willing to take those actions” (Skamp et al., 2009a, p.31). According to their result, there was a disparity between their beliefs and willingness to act; they discussed that social norms, infrastructure and applicability of certain actions are the reasons for this disparity. They found that the willingness to take certain actions such as using energy efficient appliances, buying ecological food and installing insulation at home can be encouraged by belief of effectiveness of that action. This study also showed that willingness to recycle was high and also switching off appliances and planting trees.

Semenza et al. (2008) conducted telephone interviews in Portland OR and Houston TX regarding awareness, concern and behavior change in relation to climate change. They have found that concern about climate change, level of education, age and which region you are living in can be a predictor of behavior change. The respondents with higher concern about climate change, higher level of education, younger age and people who live in Portland are more likely to change
their behavior towards SD. They also found impediments to changing behavior. Commonly mentioned barriers are: that they don’t know how to change behavior to mitigate climate change; individuals won’t make a difference; they have a lack of money and/or time.

Brody and Ryu (2006) used ecological footprint analysis (EFA) to measure the impact of a course related to sustainable development on self-reported graduate behavior. The course was highly based on problem based learning in which students deal with real world problems and create a solution. The EFA survey was given to 22 graduate and doctoral students enrolled on the course and 28 other students who were not enrolled on the course, both at the beginning and end of the semester. The result of this study indicated that students who took the course reduced their ecological footprint. They concluded that problem-based learning can be effective in changing behavior and course content focusing on a smaller spatial scale (community or region or below) is more effective than focusing on a larger scale when it comes to changing behavior.

One recent study compared the frequency of behavior intention, self-reported behavior and observed behavior (Chao and Lam, 2011). The result of the study indicated that the people might overestimate their behavior towards sustainable development even though self-reported behavior and actual behavior are highly related. This research gave attention to taking this into consideration when it comes to interpreting results solely on self-reported behavior.

The reviewed research in the paragraphs above explored the factors and barriers to behavior change and/or surveyed citizens’ and students’ behavior and action. However, how these results can be implemented in ESD has not been much stressed yet in the research and few researchers have discussed it. Above, one study indicated that the problem-based method can be effective when it comes to changing behavior. Borrows (1986) and Arbuthnott (2009) also argued that assignments and class exercises based on the problem-based methods can be valuable to concrete change. Some researchers discussed that the methods health programs used to help people to overcome smoking habits can be applied to overcome habits working against sustainable development. Courses focusing on a specific domain e.g. transportation, energy and consumption would help students to frame specific behavior intentions and these intentions can be translated into an implementation plan (Gollwitzer, 1999, Arbuthnott, 2009) Besides, many other researchers discussed diverse learning methods that encourage behavior change and actions. These learning methods will be discussed in more detail in section 4.2.4.

In this section, a lot of research was reviewed in three broad areas: factors and barriers to behavior change and action; investigation of students’ and citizens’ behavior intention and self reported behavior; and the implementation of the former two in ESD. However, there were no studies to integrate these three areas into one even though it can be very beneficial to promote the goal of ESD. Besides, teachers’ or educators’ views about behavior change were not investigated in earlier studies. So, this paper will study these three broad areas as a whole, together with educators’ knowledge and their attitude towards behavior change.
4.2. Theoretical framework

Over the past 40 years, many researchers have explored the roots of behavior and action for sustainable development. When it comes to defining behavior and action for sustainable development, many researchers didn’t clarify the difference between action and behavior. However, Jensen and Schnack (1997) did: “Related to an action, there will always be a conscious making up of one’s mind, while this is not necessarily the case with a behavioral change which could be caused by pressure from other people (e.g. a teacher or peers) or by other influence such as advertisements.” (Jensen and Schnack, 1997, p.476) Moreover, Jensen and Schnack also defined direct environmental action and indirect environmental action. Direct environmental actions are actions that “directly contribute to solving the environmental problem” (pp.478-479) e.g. sorting out garbage, and decreasing one’s energy and water consumption. Indirect environmental actions are actions “whose purpose is to impact others to do something to contribute to solving the environmental problem” such as demonstrations, lobbying and voting (Jensen and Schnack, 1997, p. 479).

In this section, the theories of selected factors of behavior and action that should be considered in higher education will be looked at in detail. In addition, some learning methods with regard to these factors will be reviewed.

4.2.1. Four kinds of knowledge

In early studies, researchers defined different kinds of knowledge and Kaiser and Fuhrer (2003) argued that these different kinds of knowledge should work together convergently to foster behavior and action. They explained four different knowledge domains: Declarative, procedural, effectiveness and social knowledge.

Declarative knowledge gives us an understanding of how environmental systems work (Kaiser and Fuhrer, 2003). To be specific, declarative knowledge explains ecological structure and how it functions, e.g. the side effect of pesticides can be a declarative knowledge. Declarative knowledge is least effective in fostering pro-environmental behaviors (Simmons and Volk, 2002, Pooley and O’Connor, 2000, Frist and Larson, 2011) but “declarative knowledge has been the central focus of most educational programs” (Frist and Larson, 2011). As mentioned in the literature review section, knowledge has very little impact on environmental awareness and concern and behavior change because the earlier theory is mainly focused on declarative knowledge. While declarative knowledge doesn’t lead to behavior change directly, the lack of this knowledge may deter behavior change (Frist and Larson, 2011). For instance, if someone doesn’t know plants need water, that person may not water the plant.

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Procedural knowledge explains how to proceed with certain actions, e.g. how to recycle and how to use public transportation (Frisk and Larson, 2011). Some empirical studies found that procedural knowledge can be more effective than declarative knowledge when it comes to fostering behavior and action. For example procedural knowledge about how to participate in decision making processes can lead to higher political engagement.

Effectiveness knowledge addresses ecological consequences and effectiveness of different behaviors (Kaiser and Fuhrer, 2003). In other words, it explains the relative effectiveness of different behaviors on sustainable development so it helps us to optimize our behavior change. One example of effectiveness knowledge is to know whether using energy efficient devices have greater impact on energy conservation than curtailing energy use. Once people want to make an effort for sustainable development, people are likely to know the relative effectiveness of different behavior alternatives. In general, however, effectiveness knowledge is missing among the public. For instance, not many people know how “a household can best conserve energy” (Kaiser and Fuhrer, 2003, p.602).

There are two forms of social knowledge: the first form refers to “the motives and intentions of others” (p.603); second form deals with “socially shared or common knowledge” (p.603) such as conventional norms and moral norms (Kaiser and Fuhrer, 2003). Conventional norms tend to be based on social customs or tradition. Moral norms refer to welfare fairness and justice (Turiel, 1985). A lot of research emphasizes that social knowledge can bring about behavior change (e.g. Hornik, Cherian, Madansky, & Narayana, 1995). On the other hand, if the dominant culture is not promoting sustainable development, e.g. in the case of consumerism and materialism, people are less likely to behave or take action sustainably (Rajecki, 1982).

### 4.2.2. Locus of control

Locus of control “represents an individual’s perception of whether he or she has the ability to bring about change through his or her own behavior or action” (Kollmuss and Agyeman, 2002, p.255). People who have an internal locus of control perceive that their action can make a difference. On the other hand, people who have an external locus of control believe that “the power to cause changes in one’s personal life is outside the individual” (Uitto et al., 2004, p.83), such as random events or action from more influential people (Fransson and Gärling, 1999). So, people with external locus of control think that their behavior or action is insignificant to make a difference and change can only be made by influential people.

Many researchers argued that locus of control is one of the critical factors when it comes to environmental responsibility. Hines et al.’s (1987) meta-analysis demonstrated that in 15 different studies, people with an internal locus of control behave more often pro-environmentally than those with an external locus of control. Several studies (Ramsey, 1987; Holt, 1988, Simpson,
showed that an instruction focusing on ownership and empowerment resulted in behavior change pro-environmentally. Therefore, people with an internal locus of control are more likely to act for sustainable development than those with an external locus of control. Uitto et al. (2004) confirmed earlier research with their study which found that students with an external locus of control do not see the need of individual responsibility towards the environment. However, issues of sustainable development are global problems; many people think that they cannot do so much as individuals (Gifford, 2011). For instance, the BBC 2004 poll showed that only 54% of the British public believed that changing their own personal behavior would have an impact on the mitigation of climate change (Lorenzoni et al., 2007, BBC, 2004).

4.2.3. Emotional involvement

Emotional involvement is defined as the extent to which we have an affective relationship to the natural world. Emotional involvement is also called environmental sensitivity. Emotional involvement affects the ability to have an emotional reaction when confronted with a problem concerning sustainable development. It shapes our values and attitudes towards the environment. With environmental knowledge it also shapes our environmental awareness (Kollmuss and Agyeman, 2002). A certain degree of environmental knowledge and awareness is necessary to have an emotional involvement. For example the picture of oil-covered seabirds can lead to emotional involvement. However, some information which contradicts or threatens economic prosperity and material needs can makes us avoid accepting information (Festinger, 1957). Emotional involvement is bigger when we have direct experience than when we have indirect experience (Newhouse, 1990, Chawla, 1999). Childhood experience in nature and direct experiences of environmental destruction increase our emotional involvement in nature. Also, role models, educational courses and books can affect our emotional involvement in nature (Hungerford and Volk, 1990).

Locus of control is a decisive factor when it comes to how emotional involvement leads to behavior and action for sustainable development. Emotional involvement will likely lead to action and behavior change when we have an internal locus of control. Primarily, we have a negative emotion such as fear, sadness, pain or guilt when we are exposed to problems of sustainable development. These negative feelings lead to psychological responses to relieve us from the negative feelings. The psychological responses are counteractive to lead to behavior change and action towards sustainable development. The responses include denial, rational distancing, apathy and delegation. Denial is “the refusal to accept reality” (p.255), rational distancing is “being aware of the problems, but stopping to feel any emotions about it” (p.255) and delegation is “refusing to accept any personal responsibility and to blame others for environmental destruction” (Kollmuss and Agyeman, 2002 p.255).
4.2.4. Learning method

As discussed earlier, there are some studies which implement psychological theories to educational programs for sustainable development to effectively reach the goal of the program. Doug McKenzie-Mohr (2000) introduced Community-Based Social Marketing using a hybrid combination of psychology and social marketing to promote sustainable behavior (McKenzie-Mohr, 2000). It was shown that the Community-Based Social marketing approach is more successful when it comes to endorsing pro-environmental behavior than the information intensive approach (Kollmuss and Agyeman 2002, McKenzie-Mohr 2000). Even though Community-Based Social Marketing is not a school program, the steps involved can be applied to a school program. “Community-Based Social Marketing involves the following steps: carefully selecting an activity to be promoted; identifying barriers to the activity; designing a strategy to overcome these barriers, when possible; piloting the strategy with a small segment of a community; and, finally, evaluating the impact of the program once it has been implemented across a community” (McKenzie-Mohr, 2000, p.532). They also reviewed tools for behavioral change such as “gaining a commitment from an individual” (p.534), and “a prompt”, which is “a visual or an auditory aid to remind people to carry out an activity that they might otherwise forget” (McKenzie-Mohr and Smith, 1999, p.534).

Frisk and Larson reviewed various pedagogies which can develop competencies for transformative action for sustainable development. First of all, the pedagogy dealing with experimental activities will be looked into. Experimental activities provide an opportunity for students to apply their idea and learned knowledge (Frisk and Larson, 2011). Experimental activities enable students to retain the knowledge, skills, and values better. According to Cortese (2003), “we retain 80% of what we do and only 10 or 20 % of what we hear or read” (p.19). Project-based learning is one of the pedagogies involving experimental activities. Project-based learning typically has the following components: “(1) a driving question that organizes a long-term, authentic investigation or design project, (2) the production of tangible, meaningful artifacts as the end products of the learning activity (3) collaboration with any subset of a learner’s community including peers, teachers, or members of society, and (4) the use of a cognitive tool such as the Internet to support the process of inquiry.” (Barab and Luehmann, 2003, pp.457-458) Another pedagogy involving experimental approach is Place-based learning (or community-based learning) from which students engage in community service and interact with peers, teachers and diverse stakeholders. From community based learning, students can learn that they can make a change and also develop a stronger sense of responsibility for their community (Frisk and Larson, 2011).

Visualization exercises are the main approach to encourage foresight thinking to students. Foresight thinking entails asking questions about long-term trends and future scenarios and preparing for future changes. It also deals with taking responsibility of our impacts on future
generations and considering intergenerational equity. Visualization exercises have the following steps of investigation: “(1) where are we now (current state), (2) where are we going (based on past, present, and future trends), (3) where do we want to be (vision statement), and (4) how do we get there (action plan)” (Frisk and Larson, 2011).

Role-playing facilitates students to understand the complexity of real problems (Segal s et al., 2010) and stakeholder’s perspective (Frisk and Larson, 2011). Role playing deals with a situation that involves conflicts among multiple stakeholders and is open for diverse solutions (Maier, 2007). The steps of role playing involves: 1) briefing the process of role play, 2) adoption of role to play, 3) issues or problems occurring 4) interaction between stakeholders and 5) debriefing and discussion (Maier, 2007).
5. METHOD

5.1. Research design

This thesis is an evaluation research using mixed-method designs. Fournier (2005, p.140) defined evaluation as “an applied inquiry process for collecting and synthesizing evidence that culminates in conclusions about the state of affairs, values, merit, worth, significance, or quality of a program, product, person, policy, proposal, or plan”. The terms merit and worth in this definition need to be clarified. Merit is “the absolute or relative quality of something, either overall or in regard to a particular criterion” (Mathison, 2005, p.247). Mathison (2005) also defined the “worth” and clarified the difference between “worth” and “merit” by giving an example:

Worth is an outcome of an evaluation and refers to the value of the evaluand in a particular context, as opposed to the evaluand’s intrinsic value, which is its merit. Worth and merit are not dependent on each other, and an evaluand (e.g., a doctor) may have merit (she is a highly skilled cardiologist) but have little worth (the hospital needs an anesthesiologist). (p.452)

So, evaluation research deals with the worth, merit, quality, effectiveness or values of an educational program, or a product (Johnson and Christensen, 2000, Gay and Airasian, 2000)

The research design method should be decided according to the research objectives and research focus. In general, quantitative methods are used to test a theory or hypothesis, whereas qualitative methods are appropriate for developing deep understanding and capturing human perspectives. While quantitative methods are more outcome-oriented, qualitative methods are more process-oriented. Quantitative research deals with large numbers of participants. Conversely, qualitative research involves small number of participants. Quantitative methods are used for investigating relationships and study cause and effect phenomena (Gay and Airasian, 2000). Mixed-method designs refer to using both quantitative and qualitative methods for data collection and analysis in the same study (McMillan and Schumacher, 2006, Mertens, 2010). By adopting both quantitative and qualitative methods, researchers can incorporate the strengths of each method. “This provides for a more comprehensive picture of what is being studied, emphasizing quantitative outcomes as well as the process that influenced the outcomes” (McMillan and Schumacher, 2006, p.401). On the other hand, mixed method design requires researchers to master both methods. Also, researchers might use one of the methods superficially. In this thesis, the mixed-method design was used because both quantitative and qualitative methods were needed for different research aims.

A questionnaire survey was considered appropriate for research aim 1,2 and 4 because of the following reasons: 1) a questionnaire allowed using statistics to find the correlation between many factors and students’ intention to behave and act for sustainable development; 2) to deal
with more than 100 students, quantitative methods were more appropriate than qualitative methods.

On the other hand, the interview method was considered to be suitable for research aim 2, 3 and the final research question in order to deeply understand design and execution of the course. Also, course coordinator’s perspective, attitude and knowledge, which affect the course and students, can be better obtained by qualitative methods. Besides, the number of course coordinators was quite small.

5.2. Research subject

The main subjects of this thesis were CEMUS students and course coordinators from the courses provided in English spring 2011. There were other courses in Swedish but they were not studied because the author of this thesis didn’t speak Swedish, so there was a limitation to understanding the course homepage and material as well as to communicate in Swedish with research subjects. Also, the course impacts on international students were considered more valuable information when it comes to generalizing the course impacts on students regardless of students’ nationality and cultural background. There are many stakeholders participating in planning, designing and preparing the courses but this thesis only studied course coordinators who are mainly in charge of deciding guest lecturers, assignments, seminars and workshops as well as communicating with students.

5.3. Research procedure

The research was carried out in accordance with the following process: first, a theoretical framework was made. Various theories about behavior and action change and learning methods were studied and relevant literature was reviewed to build a framework. Theoretical frameworks explain diverse factors and barriers to behaviors and action towards sustainable development and learning methods related to this. Based on the theoretical framework, questionnaires and interview questions were carefully designed. The second part of the study was analyzing the result of questionnaires and interviews to assess the effectiveness of the courses and to diagnose the strength and weakness of the course. Thirdly, suggestions for improving the effectiveness based on analysis and literature reviews were given.
5.3.1. Interview

Interviews with six out of seven course coordinators were administered during May and June. Emails to introduce the thesis topic and schedule the interviews were sent to each course coordinator, and six course coordinators responded. Six interviews were conducted on different days in a small seminar room, classroom and course coordinators’ office. Each interview took about 30 to 40 minutes. Interview questions were partially structured; the focus of the interview was chosen in accordance with the research aim; questions were formulated but the order of questions was changed sometimes; some questions were added or modified as deemed appropriate. Questions were open-ended and questions which can be answered with Yes or No were avoided (Gay and Airasian, 2000).

Interview questions consist of three parts: course coordinators’ attitude and perspective on sustainable development, course information, and course design and evaluation. On top of the prepared questions, additional questions were asked according to the flow of the interview e.g. to clarify the interviewee’s answer or on subjects related to their answers. Three interviewees had met the interviewer before the interview and the three other interviewees met the interviewer for the first time at the time of the interview. The interview began with a personal introduction, and a brief introduction of the interview topic. During the interview, the interviewer didn’t take any notes since it might distract the interviewee and abrupt the flow of interview. Every interview was recorded with the consent of the interviewee. Interviews were transcribed verbatim and word for word, retaining frequent repetitions. However, pauses, emphases in intonation, emotional expression were not transcribed. Reporting the verbatim interview includes two problematic issues: miscommunication or misunderstanding, and ethics. “Oral language transcribed verbatim may appear as incoherent and confused speech, even as indicating a lower level of intellectual functioning. [...] The publication of incoherent and repetitive verbatim interview transcripts may involve an unethical stigmatization of specific persons or groups of people” (Kvale and Brinkmann, 2008, p.187) Therefore, when the interview was reported, some repetitions and unclear words that disturb communication with readers were omitted, but only if that wouldn’t provide an incorrect interpretation of the statement. However, as long as it doesn’t interrupt the flow of the transcription, the interviewee statements were reported as it is.

5.3.2. Questionnaire

When doing the interview, each course coordinator was asked if questionnaires could be handed out to students at the last day of the course, and everyone accepted this. A few minutes were given to explain the purpose of the questionnaire at three of the classes before the questionnaires were distributed. Most course coordinators also encouraged students to answer the questionnaire. The last class of the course, ‘Sustainable Design – Ecology, Culture and Human Built World’,
was a project fair in the lobby of Blåsenhus (one of the university buildings). So, a brief introduction of the questionnaire was described in the paper instead of being announced and each student was approached and asked for participation in the survey. Thus, the number of participants in each class was very much dependent on the attendance rate on the last day of the course. There were less participants at the ‘Sustainable Design – Ecology, Culture and Human Built World’ course compared to other courses, since it was a project fair. Some students left early before the questionnaire were distributed, and some students didn’t show up at the project fair. Also, ‘Sustainable Development - Project course’ had a low attendance on the last day of the course.

Thus, participants of the questionnaire were students that attended the last class for each respective course in May and June 2011. A total of 113 students completed part of or all of the questions. Some students who took more than one course answered questions with regards to the impact of each course, several times. The majority of students were aged between 20 and 29 and about 15% of participants were older than 30 (see appendix 2). About half of the students were from Europe and a small number of students were from South America and Oceania. Russia was considered as Europe in this study. The top 35 advanced economies, according to International Monetary Fund (hereafter IMF) report 2011 (Währungsfonds, 2011), were considered developed countries. About 55% of students are from developed countries and 45% of those are from developing countries. About 17 % of students have taken only one class at CEMUS and the rest of the students have taken more than one. 41% of students are studying sustainable development as their major program, 10 % of students are studying environmental studies and the rest of students study other programs as their major. Environmental studies include all programs with the word “environment” in their program name, such as environmental economics, environmental management and environmental science. About 47 % of students grew up only in urban areas and other students grew up in suburban and rural areas.

The questionnaire questions were made based on theoretical framework, literature review and questionnaires from earlier research. Several questions from earlier research (Skamp et al., 2009a, Michalos et al., 2011) were used to compare the result.

The questionnaire consisted of five parts. The first part was a set of Sociodemographic questions concerning: age, sex, nationality, occupations, major of the studies, area of upbringing, courses that they are taking, number of the courses that they have been taking at CEMUS. From the second to fourth part, the respondents could point out to what degree they agreed with each statement. The answers could be given on a 4-point, Likert-type scale ranging from 1(don’t agree), 2 (agree a bit), 3(mostly agree) to 4 (totally agree). In the second part, statements about environmental concerns, knowledge of sustainable development, their locus of control, emotional involvement, attitude and belief related to sustainable development were listed. The course impacts on respondents’ attitude and behaviors were measured in the third part.
Behavioral intention and intention to perform indirect actions towards implementation of sustainable development were measured in the fourth part. Finally, respondents were asked what the main barriers are for them to act or change behavior towards sustainable development.

5.4. Ethical consideration

Educational research generally deals with human beings so it is important to consider research ethics for doing research. The investigator or researcher “should be responsible for the ethical standards to which the study adheres” (McMillan and Schumacher, 2006).

This study was processed with consideration of the International Sociological Association's (ISA) Code of Ethics. This Code of Ethics states that researchers should, e.g.: “be aware of the fact that their assumptions may have an impact upon society”; “disclose the methods by which they proceed as well as the general sources of their data”; respect “security, anonymity and privacy of research subjects”; “ensure that their results be not manipulated” and obtain “consent of research subject and informants in advance” (International Sociological Association). These codes of ethics were taken into account as the research of this thesis proceeded. To be specific, the researcher has kept an unbiased attitude as far as possible when doing the research. All questions were designed not to direct subjects’ answers or responses. The security, anonymity and privacy of research subjects were respected when the results were presented and in the process of the research.

5.5. Limitation

One of the aims of this thesis was to measure the course impact on students. To know the course impact on students’ behavior and action, the questionnaire should be handed out twice: at the beginning and at the end of the course to compare the results. However the thesis work started after the beginning of the course and questionnaires weren’t provided at the beginning.

This thesis used two different methods for different research subjects. A questionnaire survey was used for measuring students’ behavior and action intention, student’s perspectives about course impact and factors and barriers to their behavior and action towards sustainable development. Interviews were used for analyzing course coordinators’ knowledge and perspectives about behavior change and action towards sustainable development and their perspectives on course impacts. However, using only questionnaires for students might limit understanding of students’ perspective on the course impact. However, every student might have different viewpoints and perspectives on course impacts as well as on factors and barriers to behavior and action towards sustainable development. Thus, selecting a few students for the
interview and making them as representatives of all CEMUS students were not considered, and interviewing a lot of students was outside the work load limitations set up for this thesis.

The theoretical framework of this thesis covers several psychological theories that can be applied to ESD. However, questionnaires weren’t fully based on this theoretical framework because the theoretical framework was developed further after handing out questionnaires. Thus, the number of questions regarding emotional involvement, locus of control and four different kinds of knowledge weren’t big enough to generalize from. Questions about the course impacts on students could have demanded written answers in order for the responses to be more open and diverse. A question about the main barriers to behavior change was asked to students through the questionnaires, but this wasn’t asked to course coordinators in the interview. It would have been an interesting comparison had it been asked. During the interview, follow up questions were asked very rarely. More follow up questions would have given deeper insights into the course coordinator perspectives.
6. RESULTS

6.1. Interview results

Seven lenses were used to analyze the course coordinators’ responses: 1) definition of sustainable development, 2) what should be done for SD, 3) relationship between knowledge, attitude, and behavior (action), 4) perspective and interest as well as factors related to behavior and action, 5) course coordinators’ expectations from students, 6) learning method and course design related to behavior and action change and 7) Critiques and challenges of CEMUS. In order to respect anonymity, course coordinators’ names are not stated instead, they are referred to as Coordinator A to F. In the quotation of the interview, […] means one or several sentences are omitted, :: means prolongation of the sound immediately prior. (.) indicates a tiny gap within or between utterances.

6.1.1. Definition of sustainable development

In the section 2.1, the concept of sustainable development was discussed. Since the concept of sustainable development is very wide and includes various issues, numerous definitions of sustainable development exist. Since the four courses were focused on sustainable development, it was asked how course coordinators define sustainable development, to see their view of sustainable development. Course coordinators play a big role in the CEMUS courses because they take part in designing the overall course together with others, run seminars and interact with students directly. What they define and think about sustainable development can affect how they design the course and their priority and focus of the course. Hence, in this section, the answers to the question, how they define sustainable development, will be dealt with.

Table 1 Categorization of Analysis: Definition of sustainable development

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<th>Mentioned by interviewee</th>
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<th>F</th>
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<td>Bruntland report or future generation</td>
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<td>Have a no definition/ don't have a alternative definition</td>
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<td>Three dimension of sustainable development</td>
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<tr>
<td>Existence of opportunity</td>
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As reported in Table 1, when asked to define sustainable development, most course coordinators found it difficult. Two course coordinators even answered that they don’t have a definition for sustainable development or an alternative definition; for example, coordinator B stated that:

> I don’t really have a definition of sustainable development. I think it’s quite, um, difficult; one, to have a definition of it, and two, quite counterproductive. However I would say that sustainable development is not so much about the absence of problems, as people often find it, but more about the existence of opportunities.

It is not clear where the interviewee wanted to get by stating that “it would be counterproductive to have a definition of sustainable development”. However, when designing a course on sustainable development, a definition, or several alternate definitions, helps the student to grasp the concept and to get an understanding of how it is used, and what people refer to when using it. The coordinator also argued that SD is often approached by discussing problems rather than opportunities.

Three coordinators used the most common definition of sustainable development, from the ‘Brundtland Report’ in a part of their answers. Also three course coordinators stressed the importance of the equality between the rich and poor, or social fairness, while they defined sustainable development. For example, coordinator E emphasized the unfairness when it comes to sharing resources:

> It is really hard but I guess it’s development that where everyone on the planet can fulfill their needs with respect to the ecosystems and the planet, so I guess it’s about a lot of in mindset of people how they view their surrounding, environment to be more respectful to use resources in a way that make it possible for all people to do. So, it’s a lot about equity, cause now [...] small portion of the world is using too much resources but a large number of people are using a little bit of resources, but they want to use more and they, I mean, they should be able to develop.

From the above statements, “small portion of the world” can be interpreted as the rich parts of the world, generally having a small population. “A large number of people” can be interpreted as people from poor parts of the world, in general with big population. Coordinator E defined sustainable development as the development that enables everyone to fulfill their ecosystem needs. So the coordinator asserted that the people from developing countries or least developed countries should be able to develop and people should be more responsible when it comes to using resources to make sure other people can also fulfill their own needs. However, the coordinator didn’t consider the intergenerational equality between the current and coming generation, which is commonly discussed in sustainable development discourse.
Coordinator A also underscored the fairness between the rich and poor. Moreover the coordinator brought up several problems of the ‘Brundtland definition’ of sustainable development while mentioning the benefit of it:

[... but, it doesn’t really address how, and also it’s like building on the old way of development I would say. So the new thing is only like we still need development, we only need to develop sustainably. So it was (.) the benefit is that brought together, you know, environment issues together with development issue. But it was not really addressing the roots, I would say other problems, you know, (.) rich world being much more responsible for the damage we see of ecological, economical, social systems in a world. So, I think that definition more serves us bases for discussion maybe than actually definitions just to swallow, follow. But, I don’t have really another alternative definition.

From the above statement, coordinator A pointed out that one problem of the definition of sustainable development from ‘Brundtland report’ is that it is built on the old way of development. This indicated that a new definition of development or new way of development is necessary for sustainable development. Another problem brought up was that it doesn’t address the root causes of ecological, economical and social damages. The coordinator attributed these problems to the rich part of the world and stressed that they should be far more responsible.

To sum up this section, many course coordinators showed the difficulties of defining sustainable development. Sustainable development involves many different kinds of issues that cannot be explained easily. From the interview, it was found that more than half of the course coordinators stressed the equality between the rich and poor part of the world when it comes to sharing the resources and responsibilities for the problems related to sustainable development. In addition, three course coordinators also mentioned the equality between current and coming generations. Issues also brought up included: 1) development based on the old way of thinking is not suitable for sustainable development. The concept of development should be redefined for sustainable development and; 2) SD should not be about problems but about opportunities.

6.1.2. What should be done for sustainable development?

As written in the background chapter, sustainable development has become an international main agenda as a big challenge in our time. Sustainable development involves many different kinds of issues and problems. However, how we can achieve the sustainable development is still perceived as a difficult question. ESD should not only deal with the issues of sustainable development but also the way to reach it. There can be many ways of reaching sustainable development but the particular interest of this thesis is people’s role to behave and act in order to achieve sustainable development. So, in this section the course coordinator responses to the
question of what is the key or needs to be changed will be discussed. I will also analyze if they take into consideration the importance of behavior and action towards sustainable development.

Table 2 Categorization of Analysis: what should be done for sustainable development?

<table>
<thead>
<tr>
<th>Issue addressed by interviewee</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values should be changed</td>
<td>o</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Education system should be changed</td>
<td></td>
<td>o</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Private sector has a big power</td>
<td></td>
<td></td>
<td>o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in economic system or economic collapse</td>
<td></td>
<td></td>
<td></td>
<td>o</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change power relation</td>
<td></td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social equality or justice needed</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culture misunderstanding</td>
<td></td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with power need to change</td>
<td></td>
<td></td>
<td></td>
<td>o</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circular thinking</td>
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<td></td>
<td></td>
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</tbody>
</table>

As seen in table 2, they mentioned different issues of what is important or what is needed for sustainable development. However, most of the issues don’t consider the role of individual, behavior and action directly. In this section, not every issue from the table 2 will be discussed, but some interesting issues will be introduced.

First of all, the statement of coordinator A who argued that the key of sustainable development is economic collapse or an alternative economic system will be introduced:

Some people say that the only thing that will change the system is, like a collapse, you know, economic collapse and maybe it is like that, I’m not sure […] or maybe ecological collapse which is of course linked, but perhaps the economic collapse comes first, I don’t know. To change it in more smooth way, you know, instead of collapse (.) um. I don’t really see it’s coming, but there are of course new ideas about alternative economic (.) alternative economic models are coming! which I think is promising. And if these ideas can come to the very top political level, globally, then there might be like some chances for implementation of these alternative economic models, but it’s very very far from that of course today, sadly enough. So the key :: (.) I mean, I don’t have the key of course, but I mean, it’s kind of sad to see the key as collapse.

As seen above, coordinator A asserted that sustainable development might only be achieved by an economic or ecological collapse. Even though the interviewee mentioned that there are
alternative economic models to collapse, which can lead us to the path of sustainable
development, the interviewee didn’t specify or go into detail about such an alternative model. To
think that key or solution for sustainable development is a collapse can lead to negative emotions
such as sadness, pain or fear. In fact the interviewee showed negative emotion by saying that,
“sadly enough” we are far away from alternative economic models to be implemented. If too
much negative feeling gets communicated in a course teaching sustainable development, this can
deter students from taking actions, as stated earlier in the theoretical framework section. Also,
creating an alternative economic model is not a tangible or easy goal for a person who is not an
expert. It might lead people to thinking that they don’t have any capability for taking action,
since creating an alternative economic model might be perceived as something for experts.

Second, two course coordinators had the opinion that changes in values are needed to reach
sustainable development. One course coordinator didn’t go to detail why values should be
changed. So, only coordinator D’s statement will be analyzed:

First of all, I think that there is some kind of lack of respect in the world for different people,
also for the nature. […] I think everyone would respect each other and each others’ choices
and that will be another kind of understanding. People will be more likely also to give up
things that they can see it’s not very good for other people. Um, I think actually that will be
the main thing cause then people will see that ‘oh! Maybe driving the car to work back and
forth or taking this flights to go to my holiday and or buy all the things that to do is not
necessary’ cause they will find other values in life.

From the above statement, the course coordinator believed that if people respect other people and
nature, they are more likely to give up things that are not good for other people, for instance, by
reducing car usage and traveling by airplane. It can be seen that the interview presupposed that
changes of values will lead to a change in behavior. However, it should be pointed out that
changes in values can affect people’s behavior but it doesn’t necessarily lead to behavior change.
As stated in the literature review and theoretical framework sections, there can be a discrepancy
between the value and the behavior.

Third, coordinator F stressed the role of private sectors, laws and regulations.

I think that business and corporations have a lot of responsibilities, and have a lot of, um,
opportunities to make them big changes, because they have a lot of power and a lot of money.
They have the ways to react fast. They can make fast changes. I mean government and
institution tend to work more slowly. […] So I think the business the private sector is a big
key

As seen in the statement, coordinator F claimed that the private sector has a big role to pursue
sustainable development because they have a lot of power and money which enables them to
make big changes. It is true up to a point that they have big power and money, but it should be
pointed out that the private sector pursues profit rather than public benefit. Since sustainable development is highly related to public benefit, it is difficult to imagine that they will work for sustainable development without expecting any private benefit.

Coordinator E insisted that influential people need to change and also that common people have a role to make people in power change. The coordinator also said that behavior change is not enough, so we need to perform indirect action.

I think, um, people that are empowered needs to, they are the one needs change the most, I would say. Cause they are the one have power to do thing. But, I think that everyone has a role in that process to push on people that have power so that everyone can do their part, influence people have power maybe to take power also. So, it’s a lot about citizenship to see what you as person can do for sustainable development. So, it’s really difficult cause I mean the way development is heading now quite, really wrong track. So, we need to change a lot. So, I don’t think it’s not enough by just buying fair trade banana […] a large system that needs to change and then we need to influence those in power where big changes can happen.

Coordinator E stressed the role of influential people by saying that they have power to do things. The coordinator also asserted that everyone has a role to push the people in power to do things. But, it should be questioned whether an individual doesn’t have any other role than pushing the people in power. The statement, “cause they are the one have power to do thing” can be interpreted that the coordinator thinks ordinary people don’t have so much power to bring change. This perspective might affect students to have an external locus of control. An external locus of control can prevent students from doing action towards sustainable development. To be specific, the coordinator might have only stressed the indirect action such as affecting people in power instead of stressing that students have power to change society. The coordinator also pointed out that lifestyle change such as buying fair trade bananas is not enough for sustainable development, rather indirect action that influences a large system is important.

In summary, this section discussed the way to approach sustainable development. It was found that many course coordinators didn’t mention what we can do or what students can do for sustainable development. Instead they talk about intangible ways to approach sustainable development such as changes in the economic system, the private sector’s big role, empowered people’s action, etc. In addition, it was found that some coordinators showed negative views of sustainable development and external locus of control that are counteractive to behavior and action towards sustainable development.
### 6.1.3. Relationship between knowledge, attitude, and behavior (action)

In the literature review, it was mentioned that many educators believe that knowledge drives changes in attitude, which in turn leads to behavior change. In order to know what CEMUS course coordinators think about the linkage between knowledge, attitude and behavior, course coordinators were asked about this relationship. This section will analyze how they think these three factors relate to each other.

**Table 3 Categorization of Analysis: Relationship between knowledge, attitude and behavior (action)**

<table>
<thead>
<tr>
<th>Mentioned phrase</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge doesn't necessarily lead to behavior</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
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<tr>
<td>Knowledge doesn't change attitude directly</td>
<td>o</td>
<td>o</td>
<td></td>
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<td></td>
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<tr>
<td>Action can affect your value and attitude</td>
<td>o</td>
<td></td>
<td>o</td>
<td>o</td>
<td></td>
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<tr>
<td>Action can affect your knowledge</td>
<td>o</td>
<td></td>
<td></td>
<td>o</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value/attitude doesn't necessarily lead to behavior</td>
<td></td>
<td></td>
<td></td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Attitude affects behavior</td>
<td></td>
<td>o</td>
<td>o</td>
<td>o</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wondered if attitude cannot change behavior</td>
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</tbody>
</table>

Unlike the literature review, table 3 shows that every course coordinator thinks that knowledge doesn’t necessarily lead to behavior change or action for sustainable development. Coordinator A stated that:

> There is plenty of research that shows that it’s not functioning like if you get knowledge, then you start acting based on knowledge. It doesn’t work, we as humans we don’t work that way. So, maybe it’s like more complex relation between knowledge and behavior.

From the statement, it’s evident that the coordinator already knows that much research shows that knowledge cannot directly affect behavior.

Regarding the relationship between knowledge and attitude, course coordinators had diverse opinions. Three course coordinators didn’t comment and the other three course coordinators perceived that knowledge doesn’t necessarily affect behavior. Two course coordinators argued that there are many other factors that affect people’s behavior, that’s why knowledge cannot determine our attitude. Coordinator A stated that:

> […] Cause, Attitudes are more, we are not firstly created on knowledge you get in a university, you know, there are part of your culture, part of your upbringing perhaps, part of where you’re from and what did you used to do. So, I think it’s kind of simplistic way of seeing it as, you know, gain knowledge, create some kind of attitude, some kind of action.
Coordinator A noted that not only knowledge but also our background such as culture, where we are from, how we grew up, what we used to do, can affect our attitude. As discussed in the theoretical framework section, culture and where you grew up can be interpreted as social knowledge.

Course coordinators’ opinions about the relationship between attitude and behavior also varied. Three course coordinators didn’t mention anything about the relationship between attitude and behavior, and coordinator C said he/she didn’t know so much about whether it is possible to have a gap between attitude and behavior, and coordinator C asked back to the interviewer:

[…] Cause I don’t know a lot about this changing attitude. Can you have a change in attitude and not necessarily change your behavior? I am just wondering, if you can change your attitude about something but not change your behavior?

From the above statement, the course coordinator admitted that she/he doesn’t know a lot about the relationship between attitude and behavior. The coordinator wondered whether attitude change necessarily lead to behavior change or not.

Coordinator D thought that attitude can lead to behavior:

Well, the attitude definitely affects the behavior, um, but knowledge is not always affecting the attitude, I would say, or the behavior. […] I know a lot how I should behave, or what I should do. I have that kind of knowledge and my attitude is that I do it, but it’s not always that I do. I mean, I also buy a lot of stuffs, just because I can, I don’t know, you kind of get affected quite a lot from the rest of the society in how you kind of suppose to live. You are just in a way that you don’t really want to, but still it’s difficult break free, also, it’s kind of, of course, all connected […]

The course coordinator started the argument by saying that attitude definitely affects the behavior. But, instead of developing the argument further, the coordinator admitted that attitude doesn’t necessarily lead to behavior change. The coordinator talked about his/her own experience; even though he/she has an attitude in favor of action, he/she is not always behaving towards sustainable development because he/she gets affected by the rest of society which is not living sustainably. Even though the coordinator wants to break free from it, it’s hard to do. Knowledge of how you are supposed to live can be considered social knowledge, which is mentioned in the theoretical framework section. Thus, it can be interpreted that the coordinator thinks social knowledge can affect our behavior, despite our attitude.

Coordinator F believed that values can affect behavior, but also, it doesn’t necessarily lead to behavior change because social knowledge and lack of knowledge can have an influence on behavior contrary to our value:
Here’s one thing I’ve thought about. Even if you have certain values doesn’t necessarily mean that you have behave accordingly to that because you might have the values, for example that you don’t want to kill, you don’t want to see things being killed. But, then e.g. you might still eat meat. If you will behave according to your values, you wouldn’t probably eat meat, but you still do it because there is a norm that says that it’s normal to eat meat and also because of perhaps the lack of knowledge or insight in how the relation between the meat and plate and the dead animal there isn’t any connection there. You don’t see the process it’s hidden, so you don’t really have the knowledge […]

The norm the interviewee mentioned can be interpreted as social knowledge according to our theoretical background. The interviewee also said that when we see meat, we don’t really feel the connection to the dead animal because you don’t see the processing of the meat directly.

Three course coordinators said that taking some action can lead to some kinds of awareness and change in attitude. Two course coordinators didn’t provide any reason and example of why action can lead to awareness and change in attitude. But coordinator E noted:

There was also a lecture with Harald Welzer at the CEMUS conference last year, and he talked a lot about the connection between knowledge, information and action and that it’s not an automatic link, that, if you just by knowing that something is a problem you won’t automatically act right so it’s just that you need information, it’s come to suit the context that you’re in, cause you might think that… ah, we need be more conscious, first, and then we’ll act right, but he talked about that it might be the other way, that if we act, if we do something right first, then we might realize why it’s important. For example, if we sort our waste, cause we might do that even though we are not very conscious about why, but because the municipality says we should. We do it, and then, in the process of doing the right thing, then we might realize why it’s important, might sound a bit fluffy.

The interviewee said that we can behave sustainably without awareness, but because the rules tell us to do. But if we start to act, we might realize why it’s important.

To summarize, all six course coordinators understood that knowledge doesn’t necessarily lead to behavior change and action towards sustainable development. However, opinions about the relationship between knowledge and attitude, and attitude and behavior varied. Three course coordinators argued that knowledge doesn’t necessarily lead to a change in attitude, while the other three course coordinators didn’t mention anything about it. The reason they gave to why knowledge doesn’t lead to a change in attitude was that attitude can be affected by many other factors such as background and culture, which is defined as social knowledge in this thesis. Two course coordinators thought that attitude doesn’t necessarily lead to behavior change, because social knowledge can affect behavior, contrary to the attitude. One course coordinator wondered if there can be a gap between attitude and behavior. The other three course coordinators didn’t
comment about the link between attitude and behavior. Lastly, three course coordinators thought that taking action can lead to awareness and change in attitude, but they didn’t give clear explanations to that.

6.1.4. Perspective and interest as well as factors related to behavior and action

In the theoretical framework, four different kinds of knowledge, together with locus of control and also emotional involvement were discussed. During the interviews, there were no questions particularly involving these factors, except for one question about emotional involvement to one course coordinator. However, it was assessed whether they mentioned these factors and how they relate them to sustainable development. In addition, course coordinators gave their opinion and interest towards change in behavior and action. Thus, this section explores: 1) their interest and perspective towards the topic; 2) four different kinds of knowledge; 3) emotional involvement; and 4) locus of control.

Table 4 Categorization of Analysis: Perspective and factors related to behavior and action

<table>
<thead>
<tr>
<th>Mentioned by interviewee</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social knowledge</td>
<td></td>
<td></td>
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<tr>
<td>Different kinds of knowledge can change behavior</td>
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<td></td>
<td>o</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>When knowledge matches with context, behavior change happen</td>
<td></td>
<td></td>
<td>o</td>
<td>o</td>
<td></td>
<td></td>
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<tr>
<td>Negative emotion is counteractive</td>
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<td>o</td>
<td></td>
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<td></td>
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<tr>
<td>Feeling can affect behavior</td>
<td></td>
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<td>o</td>
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<tr>
<td>Low of locus control</td>
<td></td>
<td></td>
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<td>o</td>
<td></td>
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<tr>
<td>Economic incentive or taxation can change behavior</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>o</td>
</tr>
<tr>
<td>Financial crisis make less consumption and production</td>
<td>o</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Showing interest to the topic of thesis</td>
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<td>o</td>
<td></td>
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<td>o</td>
<td></td>
</tr>
<tr>
<td>Indirect action is important</td>
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<tr>
<td>Behavior change by changing thinking can be slow</td>
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<td>o</td>
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</tbody>
</table>

1) Interest and perspective

Through the interview, two of the course coordinators showed interest in the topic of the thesis. For example, coordinator C stated, “I would love to figure it out or study more about what makes these people change and also what makes people work together well.” The course coordinator’s statement can be interpreted that the coordinator has a deep interest in the topic, but didn’t study it that much yet. The coordinator also told that CEMUS course goals are related to the topic of this thesis:
Most of our course goals have in mind individual’s change (. ) the behavior (. ) and we as coordinators try to figure it out, how can we actually help this? And then also looking at myself individually what makes me change my behavior?

Two course coordinators stressed that indirect action and collective action can be more important than individual direct action and behavior change. For instance, coordinator A said that:

I think it’s important what we talk about what we can do individually not only to focus how we change our own lifestyle because that’s only one small part of what we can do as individuals […] But, what’s more important is how we, like, organize in groups and you know e.g. education, as here in CEMUS is one way, I think, of organizing, and spreading knowledge or learning from each other (. ) and (. ) which can then hopefully create some societal change.

The essence of the course coordinator’s argument is that collective action is more important than individual lifestyle change; the lifestyle change is only one small part of what one can do, but collective action can lead to social change. However, I’d like to point out that if many people change their lifestyle, it can also lead to societal or cultural change; one person’s lifestyle can affect other people’s lifestyle around that person. Also if many people change their lifestyle, it can eventually affect the culture of society. Thus, the importance of lifestyle change shouldn’t be underestimated.

Two course coordinators said that behavior change by attitude change is a slow process. They mentioned that behavior change by high taxes etc. can change behavior faster. For example, coordinator F described one barrier as people’s conservativeness of behavior by stating that:

So, I think the business the private sector is a big key but just as well is are laws and regulations and actually making something forbidden or making illegal. So and then also by I think, with right economic incentives, you can make people change the behavior quite effectively […] A shift in our thinking is necessary, but I doubt that we will get there just by making people aware of the problems by telling them about it and telling them we need to change, because people tend to be quite conservative about changing the way they live, especially if they are going to change it for something that they believe is less comfortable or less beneficial.

The point of the above statement is that economic incentives and regulation can effectively make people change their behavior. On the other hand, the course coordinator doubted that behavior can be changed by awareness, because people might think that new behavior is less beneficial or less comfortable. However, it should be noted that economic incentives and regulation cannot be made by politicians, without consent of many citizens. So, it should be discussed how citizens can actively participate in politics to affect regulation. Also, since the interviewee found some challenges, such as comforts and personal benefits working against behavior change towards
sustainable development, then, as a course coordinator, the interviewee should proceed to think how education can overcome these challenges.

Coordinator B stated:

[…] they feel it’s somebody else’s problem (.) science and politicians will solve this even though these people are not involved in science and politics. They don’t know how weak they actually are, not in terms of knowledge, but in terms of action. Politician cannot act unless he knows he is going to be elected again, if he does something that’s, you know, contentious. (.) A scientist can only provide information. They can urge politician to act, but they cannot make them. It’s people the only people who are the only actors really do thing end of the day, so until we can understand that attitude until we can change it, It’s very hard to get behavior to change in a positive way. We can change behavior by putting very high taxes on things etc. But you don’t know if that’s curtail behavior or change behavior. If we took away the taxes, would they go back to things that are bad for the environment. So, we could get behavior change very quickly, but not attitude change (.) but not under democracy um. But to get behavior change with attitude change (.) it’s slow (.) it’s a slow process.

The coordinator insisted that it’s very hard to change people’s behavior, from attitude changes under democracy, until people understand that scientists and politicians won’t solve this problem without people’s support, and normal people do have a role to play. In other words, the interviewee insisted that external locus of control hinders behavior change by attitude changes: according to the theoretical framework, people with external locus of control think that they don’t have power to bring change and change can only be made by people with power. So, external locus of control can obstruct behavior towards sustainable development. The interviewee thought behavior change by taxes is fast, while behavior change under democracy and attitude change is a slow process. However, it’s hard to say that people will not change their behavior through attitude change and under democracy unless they have internal locus of control. Moreover, there are many other factors and barriers to behavior change as mentioned in the theoretical background, such as four different kinds of knowledge, awareness, values, emotional involvement, infrastructure and cultural factors.

Coordinator A claimed that the only thing that stops consumption and production rate is financial crisis. The coordinator established his/her point by giving the example of the last financial crisis:

[…] For example, the only time the last few decades when our energy consumption has slightly decreased instead of increased, was during the last financial crisis. Then we stopped, or we didn’t continue to produce and consume as fast for a short while at least, so the only thing that seems to stop the consumption and production rate is, like, some kind of financial crisis, which is not good, of course, either.
Basically, the coordinator said that the last financial crisis is the only time in the last few decades when our energy consumption decreased, so the only thing that seems to stop our consumption and production rate is a financial crisis. An economic crisis definitely affects people’s economic activity. However, we cannot say it’s the only thing that can decrease consumption and production because we didn’t observe other things that make us decrease the consumption and production rate. In fact, different kinds of factors such as locus of control, attitude, and emotional involvement synergically encourage people to decrease consumption and production. Besides, if it is true that a financial crisis is the only thing that makes us consume and produce less, what should education do for sustainable development? Should it work to create an economic crisis so that people decrease their economic activities towards sustainable development?

2) Four different kinds of knowledge

Two coordinators said the different kinds of knowledge have different impacts on our behavior and action. For example, coordinator E argued that spreading of knowledge in a way that encourages action and focusing on what we can actually do are more important than just knowing the state of the world:

[…] So, I think that, I mean, knowledge is important but it’s more important to spread knowledge in a way that encourages action depending on where people :: what context people are in, (.) cause I think, well, since many people know what the state of the world is, then we should focus more on what we can actually do, how can we handle from that knowledge?! So, I don’t think we need that much more knowledge in order to do things right, um, but I think we should focus more on what we should actually do and to focus on actions.

In the above statement, the coordinator argued that spreading knowledge that is dependent on the context is important. Moreover, the coordinator kept arguing that the knowledge of what we can do and how we can handle the knowledge should be focused on encouraging action. According to the theoretical background, procedural and effectiveness knowledge can explain the knowledge about what we can actually do and how we can handle the declarative knowledge.

Coordinator F mentioned the social knowledge during the interview:

[…] For example, if you know that well if you kind of park your car you know that you can’t park here if I will find some other place but if you don’t know that you might park there anyway because it’s more convenient, I don’t know. Whenever if you know that there will be a storm coming then you might take shelter. If you don’t know you might be victim of the storm. So, yeah, of course knowledge change behavior I believe it depends on what kinds of knowledge and what kind of behavior and also to a certain extend perhaps.
As can be seen in the course coordinator’s statement, the question of whether you can park somewhere or not is settled by social knowledge, based on social customs or tradition. The coordinator said that knowing social knowledge can lead to some behavior change. Even though the coordinator didn’t give clear differentiation of each type of knowledge, he/she seems to understand that a different kind of knowledge can lead to a different kind of behavior.

3) Emotional involvement

A question with regards to the impact of emotion or feeling on behavior was asked to coordinator F. The course coordinator answered that:

Feelings of course, maybe feelings are strong drivers in humans in general, that is what I think, that’s what makes us human and that’s also what breaks down the myths of the rational human being. And because, you might have a very rational way of thinking, but still your action might not be very rational because you feel something else. And feelings are, I think, one of those things that you can’t explain in a good way, at least not scientifically. And I think it’s good, because there has to be something that we really can’t explain as well :: but ::: in a way, weighs up this scientific way of thinking and explaining everything, so I think it definitely would be a good idea to perhaps work more on feelings in the education, but at the same time, maybe you have to choose a certain platform. Um, I can see, for example, how in academia, it could be a bit difficult or controversial to use feelings, like that, because academia is quite conservative. There is kind of skepticism towards new ways of learning, I think, sometimes.

From the statement above, the coordinator thought that feelings can affect human behavior. The interviewee thought that feelings cannot be explained scientifically so it doesn’t have a platform to be implemented in education. The interviewee said that it can be good to work on feelings in the education, but also shows concern about the difficulties of implementation because academia is conservative.

Course coordinator B argued that negative way of addressing the issues of sustainable development should be change to a positive way. Even though the interviewee didn’t use the words ‘emotion’ or ‘feeling’ directly, the argument is related to emotion in that a negative way of addressing the issues causes negative emotion. As mentioned in the literature review, negative emotion can cause rational distancing, apathy and delegation.

Sustainable development should be about understanding that the people are happy at end of the day. […] we should see it as an opportunity to do things. Unfortunately the whole climate change, sustainable development discourses are very much based around ‘we must save the planet’, ‘we are damaging things’, ‘we are killing the earth’. It’s very negative thought, it
should be more (.) ‘this is great opportunity for us understand’, ‘great opportunity for us to recalibrate to go away from this money, wealth and powers symbols of good things’, ‘to change to completely different’.

4) Locus of control

Only one out of six course coordinators talked about locus of control. Course coordinator B stated that:

Everybody knows enough, however our attitudes wouldn’t because we have this reliance on science and reliance on politician. We feel as people (.) individual people (.) we feel excluded […] I think the reason people don’t act now is, one, they feel it’s such a negative message. They get immediately turned off by that, two, they feel it’s somebody else’s problem (.) science and politicians will solve this even though these people are not involved in science and politics. They don’t know how weak they actually are, not in terms of knowledge, but in terms of action. Politician cannot act unless he knows he is going to be elected again, if he does something that’s, you know, contentious (.) A scientist can only provide information. They can urge politician to act, but they cannot make them. It’s people the only people who are the only actors really do thing end of the day […]

From the above statement, course coordinator B claimed that our reliance on science and politics together with negative emotion is a barrier to action. The coordinator argued that people think that they are excluded and just wait for problems to be solved by politicians and scientists. In other words, the interviewee thinks that many people have external locus of control. Previously the interviewee also mentioned that sustainable development discourses are too negatively oriented. The interviewee addressed similar points as the theoretical framework of this thesis that negative emotional responses to the problems of sustainable development with external locus of control can discourage people’s action.

In brief, two out of six course coordinators showed great interest in this topic, behavior and action change for sustainable development. While one course coordinator showed interest towards this topic, he/she also admitted that he/she doesn’t know so much about it yet. Two course coordinators insisted that indirect action or collective action is more important than behavior change, because collective action and indirect action brings much bigger change to society. It is true that indirect action and collective action can bring forth societal change, however the change of lifestyle is also important in that it can affect other people’s life and culture. Thus, the importance of lifestyle change shouldn’t be underrated. Two course coordinators asserted that behavior change by regulation is more effective than behavior change by awareness and attitude, because of external locus of control and conservativeness of change in behavior. However they didn’t give any alternative to cope with these barriers. Two course
Course coordinators argued that different kinds of knowledge have different impacts on our behavior and action, even though they didn’t know of the concept of the four different kinds of knowledge, dealt with in the theoretical background. Four other course coordinators didn’t mention the different kinds of knowledge. One course coordinator argued that sustainable development discourses based on negative messages should be addressed in a positive way. Another course coordinator also thought feelings can affect human behavior but he was concerned about the difficulties of implementing emotion in education. Four other course coordinators didn’t mention emotional involvement. One course coordinator thought many people have an external locus of control with negative emotional involvement, so they are unlikely to change their attitude towards sustainable development. Overall, not many course coordinators knew a great deal about the four different kinds of knowledge, emotional involvement and locus of control with regards to behavior and action change.

6.1.5. Course coordinators’ expectations from students

Overall course goals and outcomes of the course is the key question of the course when it comes to the effectiveness of the course. In general, each course goal is decided before the course starts. In chapter two, course goals of two courses were described. Even though the course goals are described and decided, course coordinators can have their own expectations of the course outcome. Of particular interest in this section is whether course coordinators expect students to act or change their behavior for sustainable development.

Table 5 Categorization of Analysis: Course coordinators’ expectation from students

<table>
<thead>
<tr>
<th>Mentioned phrase</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expect to take action</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude change</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness</td>
<td></td>
<td>o</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical thinking</td>
<td></td>
<td>o</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficult to know the impact</td>
<td>o</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Different perspectives</td>
<td>o</td>
<td></td>
<td></td>
<td>o</td>
<td></td>
<td>o</td>
</tr>
<tr>
<td>More interest in Sustainable development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>Understand complexity</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do not expect anything</td>
<td>o</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As seen in table 5, two course coordinators expected students to become more aware and think critically. Two other coordinators expected students to obtain different perspectives. Some
course coordinators also mentioned that they expect students to understand complexity and also to have more interest in sustainable development issues. Four course coordinators mentioned that they expect students to take action towards sustainable development.

Course coordinator A stated:

[...] So, understanding complexity but also like try to address the root causes rather than symptoms and to get inspired also I would like the student to get inspired and actually do something about this whole wild field of climate change.

From the statement above, course coordinator A wants students to understand the complexity and address the root causes of climate change issues. Also, the coordinator wants students to get inspired to take action.

Coordinator B also expects students do something, and stressed the importance in having confidence to take action. As you can see in section 6.1.4, the coordinator mentioned people have external locus of control. Giving confidence to students that they can do something can be interpreted as enabling them to have higher internal locus of control:

[...] I think It’s I do not think we must change students, do think we give them confidence to do something. [...] They have in them already they just need confident. Do their own story.

Coordinator D mentioned behavior change, but in an indirect way:

Umm, I hope (.) it’s difficult to know. It’s always difficult when the courses are so small and they only have a lecture once a week. I don’t really know what other influences they got from other courses. But, I hope we can at least give them some idea they will start thinking about something that eventually will grow, maybe to some changes in their behavior, if they need some changes in behavior[...]

In the statement above, the course coordinator hoped that the course gives some idea to the student, and from that idea, they start thinking, and it grows to some change in their behavior, if it is the case that they need change. The course coordinator does not express confidence in the course’s ability for behavior change with the student. It can be argued that this represents low expectations from the course coordinator’s side. The coordinator stressed the inadequacy of the frequency of lectures, where he/she instead could have stressed the possibilities that lectures once per week brings forward a change in behavior.

Coordinator C said that he/she doesn’t have any expectations from students. Instead of expecting something, the coordinator wanted to give a comfortable and respected atmosphere for students to pursue their own needs:
[...] I don’t really have any expectations, cause that seems a little bit (.) um :: Like, in a lot of ways I feel very humbled. [...] But I think if I have any kinds of expectation for myself, as a coordinator, It’s that I hope that students felt like it was a safe and trusty atmosphere to ask questions, any kind of questions, not my agenda or the other coordinator, but their own personal, like they say in Swedish “drivkraft”, like passion for something or :: yeah I just hope that we created a classroom space where they felt respected, and they felt like education could be an exciting place to kind of explore, but students have such different needs, I mean, some students I know take CEMUS course because they feel like they’re easier, or in English. Just like everyone else, they have a life, you know, and practical issues, and it just worked out easier for them. I respect that as well because I’ve done that too.

It can be noted that the interviewee does not have any specific expectations from the students. The question is then raised, whether this implies there’re no expectations about the outcome of the course? Is the purpose of ESD more than just to let the student feel excited to learn and fulfill their own needs? As mentioned in the introduction, the vision of UNDESD is to encourage people to live sustainably and act towards the goals of sustainable development.

To sum up, four course coordinators expected students to get inspired by the course to take action in the future, either directly or indirectly. One course coordinator said he/she doesn’t have any expectations. One course coordinator expects student to gain more interest, awareness and critical thinking from the course.

6.1.6. Their learning method and course design related to behavior and action change

As you can see in the section 6.1.5, four coordinators mentioned that they expect students to perform action for sustainable development, so it will be interesting when they design the course or choose learning methods and assignments, to see if they consider behavior and action change. There were two questions related to this section. First, course coordinators were asked how they design assignments and teaching methods. Second, they were asked to explain their own courses. The questions were general, so the answers were diverse. Someone answered by describing the execution process of designing the course, and someone with what kinds of methods they were using. In the theoretical background, several learning methods that can encourage action and behavior change were introduced. Thus, in this section, two aspects will be explored: 1) if they described a similar learning method that was introduced in the theoretical background; 2) they implement any other method that can encourage behavior and action for sustainable development; and 3) Which theme area they are focused on.
One course coordinator of the project course stressed learning by doing. The course uses project-based learning, which was discussed in the theoretical background. The course coordinator explained that:

Students come with ideas on what they would like to do for the semester, something that they want to actually do and practice. Or, they develop an idea in the beginning of the course. So, it’s a lot about realizing something that you want to do. Then, students look at the idea from different perspectives and students go out and talk to people about their idea to learn more and to just know what other people think is important about the topic that they are interested in. Then, they make a project plan, for which they set up specific goals on what they want to do, what they want to achieve and why this is important. Then they have about 2-3 months to carry out and implement their project. When they finish, they evaluate the result and think about the process of making the project and on what they’ve learned. They also evaluate the content of the project to see if it was good with respect to sustainable development.

In this statement, the coordinator described an experiment method, which was similar to the experiment method that was explained in the theoretical background section. In this course, students can try their own ideas and learn from them. The course encourages students to do something.

A course coordinator from ‘the actors and strategies for sustainability’ course mentioned that they are looking at people’s action towards sustainability.

[…] I think we are looking at people and groups and what they are doing towards sustainability and if you look at the course goals, we are making a lot of effort to look at what’s working out there. […] I talked to like our supervisors in CEMUS about how realistic are the course goals, is it really, is that what we are after pulling out strategies says this ones are work, or is it more that we’re kind of exploring the way the people work and then, we could have even more general like look at complexities of systems. […] and interviewing people it’s been so exciting. And I think it’s also that you get that complexities more through the interviews automatically and students can ask exactly what they want to know but also you get this very human element, I think we missed that in academic setting that because I think that plays very big part of cultural misunderstanding. We don’t share enough all this human overlap, when interviewing someone you get more personal backgrounds, why they are motivated to do, what they are doings some risky thing, sense of what makes us […]

The point from the statement above is that there should be different strategies for different contexts. So the coordinator said that understanding complexity and cultural differences is important for different strategies. The coordinator mentioned that the course has changed a lot from last year and they introduced a new learning method, interviewing people (actors). The coordinator believes that interviewing can help gaining complexities and interactions.
coordinator also points out that if their course goal is not realistic, they cannot get some strategies that can fit any context. The coordinator said that the course goals should be more general. It seems that their courses are looking at people and strategies but there is no room for students to take some real action for sustainable development in the learning methods.

Other course coordinators didn’t mention any methods that were mentioned in the theoretical background, neither did they stress encouraging action nor behavior change when they talked about their course or learning method.

In summary, this project course uses the experiment method, which was described in the theoretical background. ‘The actors and strategies for sustainabilities’ course is looking at actors and strategies but there is no room for students take real actions or do real projects for sustainable development. The other course coordinators from two other courses didn’t mention learning methods that can encourage behavior and action towards sustainable development.

6.1.7. Criticism and challenges of CEMUS

During the interviews, some interviewees criticized part of their program, course design process etc. and talked about challenges for improving the courses. Their self criticism is a good resource to find out weaknesses to be improved upon. In this section, therefore, their criticism about CEMUS or their courses will be discussed.

One course coordinator described that designing the teaching method and assignments can be exciting and frustrating at the same time:

[…] very exciting and very frustrating and I think it’s frustrating because we’re not well trained. We don’t, a lot of us don’t have training. I’ve been a teacher with children so and I wasn’t even very well trained for that, but I would say it again it compensates both we have whole set of requirements that we have to follow and then there is actually… probably people might be surprised because it’s university course um we have to follow certain rules, so for example we have to have a certain amount of workshops, seminars, we have to use literature, in fact that we have this readers’ compendium. A lot of time, I don’t think students even read them and but we have to have them and so part of planning for like assignments what we are doing, I don’t really like that this part very much, we are trying to, it’s like when you force to do something you trying to you get you in a little bit, you wanna get in there, but still you can’t decide yourself on the structure, you kind of trying that, I would say, get away with something, feels like, so sometimes I can be really frustrated […] it’s hard thing planning assignments and. Cause you are having the both requirements and hoping to do.
The coordinator gave several difficult aspects when it came to designing the course and the assignments. First of all, the coordinator said that CEMUS course coordinators are not very well trained. Second, the coordinator said that there are certain rules to follow, because it’s a university course, and he/she struggles to follow the rules. The coordinator thinks some rules are unnecessary, e.g. that a compendium is necessary. The coordinator thought that he/she has much less freedom because of the rules. The comments give some points on how to improve the effectiveness of the course.

Another course coordinator had criticism about their evaluation.

“In terms of evaluation, it’s one of the things I’m disappointed in CEMUS, is that we don’t have much better evaluation system. Last year we created, another coordinator and I, using website where we sent an evaluation every week of the lecture or interview that’s going on that week. […] And last year, […] I wasn’t at the course report conference, but I wrote course report. I put a lot of effort into trying to show one that if you put a lot of time this report it’s useful learning exercise. You can change the course afterwards; you can use it as the felt for spelling block when you think of the course next year. It shouldn’t be after just kind of we need to throw something together. […] It’s not exciting […] in the sense it’s after thought. People are just doing to get through it.[…] There is no outcome, the outcome is doing the course conference, there is no outcome of the course report conference and maybe there is to Isak and Daniel change the course or maybe individual picking up, oh hey I like what they’ve done on that course maybe I will bring that idea into mine but maybe if we rejected in some way as to get an outcome of course conference that will be much more useful.

The coordinator said the quantitative evaluation that every course handed out at the end of the courses wasn’t good, so he/she and the other course coordinator created a new evaluation system that was handed out online every week. The coordinator said that from online evaluation he/she can get feedback early and improve the course from it. The coordinator thinks that quantitative evaluation should be improved. The interviewee mentioned that he/she put a lot of effort into course reports, both to show that it is a useful learning process, and to be able to make changes to the course afterwards. From this statement, that some other people just write a course reports without improving the course from it, he described that the course conference provides “after thought”, but “there is no outcome”

One course coordinator from the project course gave one criticism that the course project might not change much in terms of sustainable development. The coordinator said that it’s because the course is small and only a half time course so if the course is bigger, then more changes can happen. However the impacts of the course on society don’t necessarily have to do with the course size. It can be just an excuse that the course cannot affect society much because of the course size. It would be better for them to find some other reasons why the course cannot bring many changes to society and improve the course.
I think the project in the course often quite small so it doesn’t change that much in society so it’s more symbolic project. But I think that they matters a lot for the students who do them in that way it’s really good but I can feel that project in themselves might not change that much in terms of SD because they are so small because they are only half time course, so I would like to have large course where more change can happen and more concrete results.

In sum, three course coordinators provide some points to be improved in the course and with CEMUS. The first point is that CEMUS course coordinators are not so well trained. Second, their evaluation system should be better to improve the course. Third, the course impact on society is not so big.

6.2. Questionnaire result

This section will present: 1) the result of each statement about emotional involvement, locus of control, impacts of each course on students, students’ behavior intentions, students’ intention to indirect action, and other factors; 2) the correlation between variables; 3) write-out-answer of the last question about the barriers to changing behavior towards sustainable development. In the descriptions that follow, percentages given for agreement with statement are the combined responses from students who “agree totally” or “mostly”. For answers “a bit” and “not” it’s not considered that the respondent agrees with the statement. The level of confidence, or significance level, of this study was 0.05.

6.2.1. Emotional involvement

There were two variables to check emotional involvement. The internal consistency of the two variables was 0.66. “Internal consistency describes estimates of reliability based on the average correlation among items within a test” (Nunnally and Bernstein, 1994, p.251). The higher the correlation among each item, the higher the internal consistency is. In general, few variables for one sub-theme cannot produce high correlation (Raulin and Graziano, 2007). Also, an acceptable level of internal consistency is 0.7 or higher, and the internal consistency of emotional involvement was a bit lower than that. As seen in table 6, 90% of respondents have high emotional involvement. The respondents’ emotional involvement in social injustices is slightly higher than that of environmental problems.
Table 6 Emotional involvement

<table>
<thead>
<tr>
<th>Variables</th>
<th>agree totally</th>
<th>Mostly</th>
<th>a bit</th>
<th>not</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>I feel sorry or bad about environmental problems.</td>
<td>53</td>
<td>47.75</td>
<td>44</td>
<td>39.64</td>
</tr>
<tr>
<td>I feel sorry or bad about social injustices in the world.</td>
<td>65</td>
<td>59.63</td>
<td>33</td>
<td>30.28</td>
</tr>
</tbody>
</table>

6.2.2. Locus of control

Three variables were used to check locus of control. The internal consistency of these variables was 0.56, which is quite low. About 69% of respondents believed that we can create a sustainable future and about 77% of students thought that they have the ability to bring about change through their own behavior (see table 7). The ratio of positive answers for these two variables was less than that of other variables, such as emotional involvement and interest of sustainable development. Lastly about 84% of respondents recognized the benefits of personal efforts for sustainable development.

Table 7 Locus of control

<table>
<thead>
<tr>
<th>Variables</th>
<th>agree totally</th>
<th>mostly</th>
<th>a bit</th>
<th>not</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>I believe we can create a sustainable future.</td>
<td>41</td>
<td>37.62</td>
<td>34</td>
<td>31.19</td>
</tr>
<tr>
<td>I think I have the ability to bring about change through my own behavior.</td>
<td>29</td>
<td>26.13</td>
<td>57</td>
<td>51.35</td>
</tr>
<tr>
<td>I recognize the benefits of personal efforts for sustainable development.</td>
<td>45</td>
<td>40.54</td>
<td>48</td>
<td>43.24</td>
</tr>
</tbody>
</table>

6.2.3. Course impacts on students

There were five statements to check the course impacts on students. The internal consistency of these five variables was 0.86. As seen in table 8, about 65% of the respondents replied that they gained skills related to seeking sustainable solution from the courses; Around 74% of the respondents thought that the course developed their critical thinking about society and the environment; About 69% of respondents replied the course helped them develop cooperation skills; About 68% of respondents thought that the course widened and deepened the boundaries of their concern; Only 51% of respondents replied that the course changed their attitude towards environment and society.
Table 8 Course impacts on students

<table>
<thead>
<tr>
<th>Variables</th>
<th>agree totally</th>
<th>mostly</th>
<th>a bit</th>
<th>not</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>I gain skills related to seeking sustainable solutions from this class.</td>
<td>22</td>
<td>20</td>
<td>49</td>
<td>44.55</td>
</tr>
<tr>
<td>This course develops my critical thinking about society and environment.</td>
<td>42</td>
<td>33.6</td>
<td>49</td>
<td>39.2</td>
</tr>
<tr>
<td>This course helps me develop cooperation skills.</td>
<td>34</td>
<td>27.2</td>
<td>52</td>
<td>41.6</td>
</tr>
<tr>
<td>This course widens and deepens the boundaries of my concern.</td>
<td>43</td>
<td>34.6</td>
<td>41</td>
<td>33.06</td>
</tr>
<tr>
<td>This course changes my attitude towards environment and society.</td>
<td>22</td>
<td>17.74</td>
<td>41</td>
<td>33.06</td>
</tr>
</tbody>
</table>

6.2.4. Behavior intention and self-reported behavior

12 variables were used to check students’ behavior intention and self-reported behavior. The internal consistency of these 12 variables was 0.82. Compared to other variables, the statement “Even if it was more expensive, I would buy ecological or organic goods” had a noticeably lower percentage (62%) of respondents that answered “agree totally” or “mostly”, (see table 9). On the other hand, behavior intention to recycling and switching off electricity was high: about 90% of respondents agreed to the statement “To save electricity, I switch things off at home when I don’t need them” and about 92% of respondents marked that they would recycle things rather than just throw them away. For each of the statements about a behavior intention to eat less meat, purchasing locally produced products, reducing waste and water use, between 65 and 70% of respondents marked “agree totally” or “mostly”. 76% of respondents were willing to pay more for electricity, providing more of our energy was produced from renewable sources. 85-86% of respondents for each statement marked that they had an intention to buy new things less often and using a bicycle or public transportation instead of a car. The percentage of respondents that marked “agree totally” or “mostly” for each of the two statements about buying new things less often and using bicycle or public transportation instead of car was 86% and 85%, respectively.

Table 9 Behavior intention and self-reported behavior

<table>
<thead>
<tr>
<th>Variables</th>
<th>agree totally</th>
<th>Mostly</th>
<th>a bit</th>
<th>not</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Even if it took me longer and was more inconvenient, I would try to use bicycle or public transportation instead of car.</td>
<td>59</td>
<td>54.63</td>
<td>33</td>
<td>30.56</td>
</tr>
</tbody>
</table>
Providing more of our energy was produced from renewable energy, I would be willing to pay more for electricity. | 51 | 47.22 | 31 | 28.7 | 21 | 19.44 | 5 | 4.63 |
---|---|---|---|---|---|---|---|---|
To save electricity, I switch things off at home when I don’t need them. | 75 | 69.44 | 22 | 20.37 | 9 | 8.33 | 2 | 1.85 |
Even if it means that I don’t always have the latest products, I would be prepared to buy new things less often. | 54 | 50.47 | 38 | 35.51 | 12 | 11.21 | 3 | 2.8 |
Even if I really liked meat, I would eat fewer meals with meat in them. | 42 | 38.89 | 34 | 31.48 | 19 | 17.59 | 13 | 12.04 |
Even if it was more trouble for me, I would recycle things rather than just throw them away. | 61 | 56.48 | 38 | 35.19 | 7 | 6.48 | 2 | 1.85 |
Even if it was more expensive, I would buy ecological or organic goods. | 33 | 30.56 | 34 | 31.48 | 32 | 29.63 | 9 | 8.33 |
I try to purchase locally produced products. | 35 | 32.71 | 38 | 35.51 | 29 | 27.1 | 5 | 4.67 |
I have changed to environmentally friendly light bulbs. | 42 | 39.25 | 28 | 26.17 | 21 | 19.63 | 16 | 14.95 |
I have changed my personal lifestyle to reduce waste. | 33 | 30.84 | 39 | 36.45 | 26 | 24.3 | 9 | 8.41 |
I try not to use disposable products (e.g. paper cups, disposable batteries) | 28 | 25.93 | 44 | 40.74 | 30 | 27.78 | 6 | 5.56 |
Even if it’s inconvenient, I try to reduce my water use. | 33 | 30.84 | 39 | 36.45 | 26 | 24.3 | 9 | 8.41 |

### 6.2.5. Indirect action

Eight variables were used to check students’ intention to take indirect actions. The internal consistency of each variable was 0.76. Overall the intention to take indirect action is lower than the intention to behave towards sustainable development. As can be seen in table 10, only 23% of respondents donate money for social or environmental causes. The intention to participate in voluntary work was also pretty low; 41% of respondents participate in voluntary work regularly. 58% of respondents try to avoid purchasing products from companies with poor track records on corporate social responsibility. 73-74% of respondents talk to friends or family about what they’ve learned about sustainable development and marked that they will actively participate in a social movement working towards sustainable development. 79-85% of respondents showed their intention to get a job related to sustainable development, even though they get paid less and to vote for politicians who say that they’ll bring in laws to reduce global warming, even though they have to pay more tax or it stops them from doing some of the things they enjoy.
Table 10 Indirect action

<table>
<thead>
<tr>
<th></th>
<th>agree totally</th>
<th>Mostly</th>
<th>a bit</th>
<th>not</th>
</tr>
</thead>
<tbody>
<tr>
<td>I try to avoid purchasing products from companies with poor track records on Corporate social responsibility.</td>
<td>31 28.7</td>
<td>32 29.63</td>
<td>36 33.33</td>
<td>8 7.41</td>
</tr>
<tr>
<td>I participate in voluntary work regularly.</td>
<td>23 21.3</td>
<td>21 19.44</td>
<td>36 33.33</td>
<td>28 25.93</td>
</tr>
<tr>
<td>I donate money for social or environmental causes.</td>
<td>8 7.41</td>
<td>17 15.74</td>
<td>41 37.96</td>
<td>42 38.89</td>
</tr>
<tr>
<td>I talk to friends or family about what I’ve learned about sustainable development.</td>
<td>46 42.59</td>
<td>34 31.48</td>
<td>24 22.22</td>
<td>4 3.7</td>
</tr>
<tr>
<td>I would vote for a politician who said they would bring in laws to reduce global warming, even though it would stop me doing some of the things I enjoy.</td>
<td>58 53.7</td>
<td>34 31.48</td>
<td>12 11.11</td>
<td>4 3.7</td>
</tr>
<tr>
<td>I would vote for a politician who said they would increase taxes to pay for reducing global warming, even though it meant me having less money to spend.</td>
<td>53 49.07</td>
<td>34 31.48</td>
<td>15 13.89</td>
<td>6 5.56</td>
</tr>
<tr>
<td>I will actively participate in a social movement working towards sustainable development</td>
<td>47 43.52</td>
<td>32 29.63</td>
<td>25 23.15</td>
<td>4 3.7</td>
</tr>
<tr>
<td>I would get a job related to sustainable development, even though I get paid less.</td>
<td>48 44.86</td>
<td>36 33.64</td>
<td>14 13.08</td>
<td>9 8.41</td>
</tr>
</tbody>
</table>

### 6.2.6. Other factors

In addition to emotional involvement, locus of control, course impact on students, intention to behavior and indirect action towards sustainable development, effectiveness knowledge, self-criticism and their attitude and so on were analyzed. 87% of respondents were interested in sustainable development issues before taking the course (see table 11). 98% of respondents believe global warming is happening. 89% of respondents perceived that they are self-critical to their attitude and behavior while 68% of respondents conceded that there is some discrepancy between what they should do and what they do. 78% of respondents answered that they know how to act to lower their impacts on the environment. 82% of respondents thought we need stricter laws and regulations to protect the environment. About 23% of respondents thought that technology is the main solution to problems regarding sustainable development.
Table 11 Other factors

<table>
<thead>
<tr>
<th></th>
<th>agree totally</th>
<th>mostly</th>
<th>a bit</th>
<th>not</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was interested in sustainable development issues before taking this course.</td>
<td>71 64.55</td>
<td>25 22.73</td>
<td>11 10</td>
<td>3  2.73</td>
</tr>
<tr>
<td>Global warming is happening.</td>
<td>85 76.58</td>
<td>24 21.62</td>
<td>1 0.90</td>
<td>1 0.90</td>
</tr>
<tr>
<td>I am self-critical to my attitude and behavior.</td>
<td>47 42.34</td>
<td>52 46.85</td>
<td>9 8.11</td>
<td>1 0.9</td>
</tr>
<tr>
<td>Technology is the main solution to problems regarding sustainable development.</td>
<td>7 6.31</td>
<td>19 17.12</td>
<td>51 45.95</td>
<td>33 29.73</td>
</tr>
<tr>
<td>I know how to act to lower my impact on the environment.</td>
<td>29 26.13</td>
<td>58 52.25</td>
<td>23 20.72</td>
<td>1 0.9</td>
</tr>
<tr>
<td>There is some discrepancy between what I should do and what I do.</td>
<td>30 27.03</td>
<td>46 41.44</td>
<td>30 27.03</td>
<td>4  3.6</td>
</tr>
<tr>
<td>We need stricter laws and regulations to protect environment.</td>
<td>63 57.27</td>
<td>27 24.55</td>
<td>16 14.55</td>
<td>4  3.64</td>
</tr>
</tbody>
</table>

6.2.7. Correlation

Table 12 lists the significant Pearson Product-Moment Correlations among variables. Belief in global warming was associated to occupation \(F(10,98) =2.07, p<0.05\]. Exchange students believed most in global warming, followed by master students. Bachelor students believed least. The correlation between self criticism and three variables were statistically significant. The more emotionally involved to environment and social injustice the more self-critical to oneself \(F(4,106) = 3.38, p<0.05\]. The more self-critical to oneself, the more agreement to stricter laws and regulations to protect the environment \(F(4,105) = 2.84, p <0.05\]. The more self-critical to oneself, the more intent to take indirect action \(F(4,103) = 2.75, p <0.05\]. Locus of control was linked to discrepancy between what one should do and what one does \(F(4,106) = 2.48, p <0.05\]. Students who have internal locus of control agreed more to the sentence “there is some discrepancy between what I should do and what I do”. Correlation between impacts of the classes and courses that students were taking was statistically significant \(F(3,122) = 5.59, p <0.05\]. Respondents taking ‘Climate change leadership’ was most positive about the course impacts on them and next was ‘Actors and strategies’, least was ‘sustainable project’. There was a statistically significant difference concerning intention to behavior towards sustainable development depending on which continent students were from \(F(5,98) = 4.18, p <0.05\]. Respondents from EU perceived to the largest extent that they behave sustainably. The respondents from Asia and North America also perceived that they behave sustainably. The respondents from South America, Oceania and Africa perceived less so. There was a statistically
significant difference concerning locus of control depending on whether students are from developed countries or not \( F(1,104) = 4.93, \ p < 0.05 \). The respondents from developing countries had slightly higher internal locus of control. There was a statistically significant difference concerning intention to behave and self-reported behavior towards sustainable development depending on whether students are from developed countries or not \( F(1,105) = 6.10, \ p < 0.05 \). The respondents from developed countries had higher intention to behave sustainably.

Table 12 Statistically significant correlation between variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. emotional involvement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. stricter laws</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. indirect action</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. locus of control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. impact of the classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Belief in global warming</td>
<td>0.2468*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. self criticism</td>
<td>0.2603*</td>
<td>0.2529*</td>
<td>0.2913*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. discrepancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.1948*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. course taking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.3034**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. continent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.2576**</td>
<td></td>
</tr>
<tr>
<td>13. developed or developing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.2128*</td>
<td>0.2387*</td>
</tr>
</tbody>
</table>

Note: Table only includes correlations where * \( p < .05 \) and ** \( p < 0.01 \)

6.2.8. Barriers to behavior change

59 out of 113 respondents answered the last question about barriers to behavior change. Their answers were sorted into 12 categories. As can be seen in table 13, 19 students wrote that lack of money, or financial limitations are a barrier to behavior change. For instance, they don’t have enough money to afford expensive organic goods. Social knowledge is another big barrier for them. Many students wrote that modern society is centered on materialism or capitalism which affects them against sustainable development. Three students wondered why they should sacrifice themselves “if no one else does?”. 12 students said the main barrier to changing behavior is their greed, laziness, or pursual of convenience and comfort. Some students mentioned lack of knowledge and awareness as barriers; one student wrote he or she doesn’t know where to start, another student wrote that he or she is not sure which behavior is more sustainable. For example, she or he wrote, “I believe eating local wild meat is better for the
environment than eating local organic annual crops (wheat etc). So, yes, I have to read and learn more to know what really is sustainable in the long run”. Nine students wrote that lack of infrastructure such as resources, money, solutions are main barriers.

Table 13 Perceived barriers to behavior change

<table>
<thead>
<tr>
<th>Category</th>
<th>Answer</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>No barrier (1)</td>
<td>No barriers. I am acting sustainably</td>
<td>1</td>
</tr>
<tr>
<td>Convenience, greedy and laziness (12)</td>
<td>Convenience and comfort</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Greed</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Laziness</td>
<td>4</td>
</tr>
<tr>
<td>Lack of will (8)</td>
<td>Gap between will and ways</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Ignorance of what the right behavior is</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Lack of discipline</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Will power</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Commitment, lack of conscious effort to change</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>To be consequent and act sustainably all the time not only sometimes</td>
<td>1</td>
</tr>
<tr>
<td>Time + money (22)</td>
<td>Time</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Lack of money, financial limitation or constraint</td>
<td>19</td>
</tr>
<tr>
<td>Infrastructure (10)</td>
<td>Lack of resources</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Options where I live</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Availability of sustainably proved necessities</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No policy/ not too much advocacy in my country</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Lack of funding</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Lack of special program promoting sustainable development in my area</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>There are not enough sustainable solutions</td>
<td>1</td>
</tr>
<tr>
<td>Global politics (4)</td>
<td>Unwillingness and ignorance of rich countries</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Global economic barrier/gap</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>To agree at the same opinion e.g. Emission reduction</td>
<td>1</td>
</tr>
<tr>
<td>Personal value (4)</td>
<td>Personal values against sustainable development</td>
<td>4</td>
</tr>
<tr>
<td>Social knowledge or social norm (16)</td>
<td>Consumer society and culture/ materialism/modern life pattern</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Why should I if no one else does?</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Other people’s non-interest! Always have to fight for your opinion etc.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Wishes of people which around me</td>
<td>1</td>
</tr>
<tr>
<td>Locus of control (3)</td>
<td>My action is just a very small part, lack of belief it makes a difference</td>
<td>3</td>
</tr>
<tr>
<td>Jobs (5)</td>
<td>Support family=I need a job.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Lack of sustainable jobs</td>
<td>2</td>
</tr>
<tr>
<td>Lack of awareness &amp; knowledge (7)</td>
<td>A lack of understanding of environmental problem</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Knowledge about options</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Lack of information about which option is more sustainable</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Don’t know where to start</td>
<td>1</td>
</tr>
<tr>
<td>Habit (5)</td>
<td>Description</td>
<td>Count</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>Unsure how to have an impact</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Concrete action plans</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>The habit</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Not learning from childhood;</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Today human behavior that is hard to change</td>
<td>1</td>
</tr>
</tbody>
</table>
7. Discussion

This thesis explored how the CEMUS courses perform their role when it comes to the main aim of ESD: to foster behavior and lifestyles required for a sustainable future and empower students to act for positive societal transformation (2004, UNESCO Education Sector, 2006). CEMUS students’ self reported behavior and actions and their intention to behave and act towards sustainable development as well as various factors affecting these behaviors and actions were measured. The course coordinators’ knowledge and perspectives about behavior and action towards sustainable development were analyzed.

7.1. Emotional involvement, locus of control and four different kinds of knowledge

Emotional involvement, locus of control and four different kinds of knowledge were introduced in the theoretical background as important factors to affect behavior and action towards sustainable development. Through a questionnaire analysis, students’ emotional involvement, locus of control and procedural knowledge were measured.

Most respondents had high emotional involvement with regards to sustainable development. However, there were only two questions regarding emotional involvement. To get more statistical confidence on the emotional involvement of students, there should have been more questions regarding this.

There were three statements regarding locus of control. The internal consistency of responses from these three was quite low. Thus, more statements should have been made to check locus of control for high confidence. About 84% of the respondents recognized the benefits of personal efforts for sustainable development. On the other hand, 77% of the respondents believed that they have the ability to bring about change through their own behavior, and only 69% of the respondents agreed totally or mostly on: “I believe we can create a sustainable future”. Compared to another questionnaire from a 2004 BBC poll (BBC, 2004), more CEMUS students had an internal locus of control; only about half of the British population believed that “changing their own behavior would have an impact on climate change”. About 26% of the respondents agreed totally and 41% of the respondents agreed mostly with the statement, “I know how to act to lower my impact on the environment”.

There were no questions about the other three kinds of knowledge, because when the questionnaire was made, four different kinds of knowledge were not considered as the main theory. However, it was found that social knowledge is working against behavior change towards sustainable development through their answers to the last question asking their main barriers to behavior change towards SD. This confirms earlier research of the Rajek (1982) that if the
dominant culture is not promoting SD, people are less likely to behave or take action towards SD. It was also found that several students lacked effectiveness knowledge, procedural knowledge and even declarative knowledge.

7.2. Behavior intention and self-reported behavior

In general, students’ self-reported behavior and behavior intention were positive. As mentioned in the literature review section, however, much earlier research indicated that people might overestimate their behavior towards sustainable development (Chao and Lam, 2011). So, it should be taken into consideration that students’ actual behavior can be different from what they reported.

Among many variables regarding behavior towards sustainable development, the most frequently intended behavior was recycling. Earlier studies also showed that many people have an intention to recycle. In the British poll (BBC, 2004), 96% of the respondents answered that they are ready to recycle more household waste. In the study of Michalos et al. (2011), about 93% of the respondents responded that they try to recycle as much as they can. The reason why many people have an intention towards recycling can be that, in many countries, people were encouraged in many ways for many years and an effective infrastructure for recycling has been built up.

Behavior intention to switching off electricity when it’s not needed was second highest. In one of the early studies (Skamp et al., 2009a), the behavior that the respondents were most willing to adopt was to switch off electronic appliances when they are not needed. Also, in this study, it was shown that the number of respondents who were willing to adopt this behavior was greater than those who believed this would be effective in reducing global warming. In the British poll (BBC, 2004), about 92% of the respondents remarked that “they are ready to use less energy at home”. The reason why many people agreed on this statement can be that this behavior is relatively easy to adopt and has additional financial benefits.

About 85-86% of the respondents were willing to use a bicycle or public transportation instead of car. The students from CEMUS courses had a higher intention to use a bicycle and public transportation than respondents from the British poll (68% of respondents) and the study from the province of Manitoba (52% of respondents). One reason can be that the culture of riding a bicycle is very developed in Sweden and Sweden has good infrastructure for bicycle and public transportation. Students are also less likely to own a car than the general population.

About 86% of the respondents marked ‘buy new things less often’. This is quite high compared to the result from other studies. In the study of Skamp et al. (2009a), only about one third of the respondents have indicated that they buy fashion items less often.
Behavior intention to pay more for environmental costs was lower than that of other behaviors. The frequency was also lower than that of other studies. About 76% of the respondents would be willing to pay more for electricity and 62% of the respondents would be willing to pay to buy organic or ecological goods that are more expensive. 68% of the respondents had the intention to purchase locally produced products. In the British poll (BBC, 2004), 82% of the respondents showed the intention to buy more expensive but more energy efficient products and 77% would buy locally produced products. As many students wrote that their major barrier to behavior change is financial, the reason to have less of an intention to buy ecological goods and pay more for electricity is that most of students do not have very much money. According to Liebe et al. (2011) the willingness to pay for environmental cost gets affected not only by income but also awareness of responsibility and environmental concern. Thus, in order to increase CEMUS student’s willingness to pay for environmental costs, their awareness of responsibility as well as their environmental concern has to increase.

Self reported behavior about reducing waste and water was about 67%. The frequency was lower than that of other studies. In one of the other studies, 82% of the respondents indicated a willingness to reduce waste (Michalos et al., 2011). One reason for the low frequency of people who reduced their water consumption can be that students from Sweden and many other countries have not experienced a lack of water first hand.

7.3. Indirect actions

In the interview with course coordinators, they stressed the importance of indirect actions more than individual behavior change. But, the result of the questionnaire showed that students’ intention to take indirect action was slightly lower than to change individual behavior.

Among many statements regarding indirect actions, political participation such as voting for legislation (85%) and taxation (81%) towards sustainable development were the two highest.

Getting a job related to sustainable development followed next. Quite a lot of respondents (44.86%) marked “totally agree” to the statement, “I would get a job related to sustainable development, even though I get paid less.” and 33.64% of the respondents marked “agree mostly” to this sentence. About 42% of the respondents were studying sustainable development as their major and 9% of the respondents were studying environmental studies. The major of their study might affect the high percentage of agreement to this statement.

About 73% of the respondents agreed totally or mostly to the statement, “I will actively participate in a social movement working towards sustainable development”. However, there was a significant drop for the statement, “I try to avoid purchasing products from companies with poor track records on corporate social responsibility”: about 58% of the respondents agreed
totally or mostly on this sentence. In the study of Michalos et al. (2011), 55.9% of the respondents also agreed with the same statement. The percentage of respondents who reported to participating in volunteer work regularly was also low (41%). In the study of Michalos et al. (2011), 52.7% of the respondents reported that they volunteer to work with local charities.

Donating money for social or environmental causes had the lowest frequency. Only 23% of the respondents agreed totally or mostly on the statement, “I donate money for social or environmental causes”. The reason can be attributed to the fact that many students don’t have an income.

### 7.4. Correlation

From the questionnaire correlation analysis, there were several interesting findings. People who are more self critical are more willing to take indirect actions. However there was only one statement to check self-criticism which is not enough to generalize from. Students’ self reported behavior and behavior intention were significantly different according to which continent they come from and whether they are from developed or developing countries. Respondents from the EU perceived to the largest extent that they behave sustainably. The respondents from Asia and North America also perceived that they behave sustainably. The respondents from South America, Oceania and Africa did not perceive this to the same extent. The respondents from developed countries had a higher intention to behave sustainably. The reason why students from developed countries have a higher intention to behave sustainably can be that many of the questions were related to buying more expensive but more sustainable goods and donating money etc. The impacts of the course on students were significantly different depending on which course they were taking. Respondents taking ‘Climate change leadership’ were most positive about the course impacts on them and next was ‘Actors and strategies’, least was ‘sustainable project’.

### 7.5. Behavior barriers

A wealth of literature identified different constraints on action and behavior towards sustainable development. However, barriers can vary between different individuals and groups. Thus, the main obstacles for CEMUS students to change behavior were identified by the last question of the questionnaire. About half of the respondents answered the last question. The most frequently mentioned obstacle among diverse answers was financial limitation. Most respondents are not working, so they don’t have much money. However, it’s not impossible to buy ecological, organic and energy efficient products if students cut down their consumptions of other
unnecessary products. It can also be interpreted as their willingness to pay environmental costs is not that high.

The second most frequent barrier was social norms such as consumerism, materialism and modern life patterns. These social norms were also mentioned by several course coordinators as barriers to behavior and action towards sustainable development.

Many students mentioned individual barriers to sustainable development. Some students wrote that their greed, laziness and search for convenience and comfort were the main barriers. Some students had a lack of will and their lifestyle habits are not that favorable to sustainable development. Three students show that they have an external locus of control. They perceived that their actions are just a very small part so they won’t make any difference. Some students also wrote that they have lack of knowledge about behavior options and plans. They didn’t know where to start, how to have an impact or which option is more sustainable.

7.6. Course impacts on students

Both interview and questionnaire analysis dealt with course impacts on students in order to compare the expectation of coordinators and how students perceive the course impacts on themselves. Four out of six course coordinators expected students to take action towards sustainable development and other coordinators expected many different things from students. But, no one expected to increase emotional involvement, to learn four different kinds of knowledge or to get internal locus of control. This indicated that they don’t focus on these in their courses.

There were no questions to students about course impacts on their behavior and action, emotional involvement, the four different kinds of knowledge and locus of control. So, it’s difficult to know real impacts on these factors. But, there were questions regarding skills to seek SD, critical thinking, cooperation skills, boundaries of concern, and attitudes. The answers were generally good, 65-74% of the respondents agree totally or mostly with the statement regarding the course impacts on them except for the impacts on attitude. About 51% of the respondents agreed totally or mostly that course changed their attitude towards environment and society. However, this can be interpreted as that they already have positive attitudes towards environment and society since about 87% of the respondents were already interested in sustainable development issues before taking the courses.
7.7. Main findings from interview

In the literature review, it was stressed that many educators assume that knowledge leads to attitude change which then leads to behavior and action towards SD. The main finding from the interview analysis was that course coordinators knew that knowledge doesn’t necessarily lead to behavior and action towards SD but they didn’t problematize the relationship between knowledge and attitude, and attitude and behavior. However, it’s not certain that they apply this knowledge to their actual teaching method since their assignments and learning activities are very knowledge based i.e. reading, writing and discussion. The mission of CEMUS mentioned in the chapter three was to facilitate and encourage knowledge gain, critical thinking and reflection, as well as “to make it easier for students to act on theses insights if such an urge arises”. In their mission, they encourage action in a passive way by stating that “if such an urge arises”. This might be interpreted as if such an urge hasn’t arisen yet, but the world situation already demands behavior change and action urgently. Also, in their mission statement they stressed more on awareness than action. It confirms earlier research stating that many educational programs still use information-based approaches.

As mentioned in the literature review section, Mckenzie-Mohr (2000) pointed out that psychological knowledge is used little in educational programs. This thesis explored several psychological theories, in particular: four different kinds of knowledge, emotional involvement and locus of control. Through the interview analysis, it was found that most course coordinators didn’t know so much about these three. Some course coordinators even showed negative emotion towards the current situation with regards to sustainable development and some showed external locus of control. On the other hand, one coordinator stressed that we need a positive way of thinking about and approaching sustainable development, as well as having internal locus of control. But most of them rarely talked about locus of control, emotional involvement and four different kinds of knowledge.

When asked about the solution for SD, all of them talked about intangible ones, such as economic system change, private sector’s role, empowered people’s action rather than what individuals can do for SD. This can be interpreted that individual role and lifestyle change are not the main focus for their education. Course coordinators also showed their critiques on the course and CEMUS. One course coordinator said that they are not well trained as course coordinators. One coordinator criticized their evaluation system. The coordinator said that the evaluation system is not good enough to be able to apply students’ feedback. One coordinator said that their course’s impacts on society are not so big.
7.8. Learning method

As described in the section 3.2-3.5, most courses in CEMUS consist of lectures, seminars and workshops. Their common assignments include reading literature and writing reflection on it, group project work and seminars or workshop tasks. The ways of learning are very similar for the different courses, except for the project course that is mainly focused on projects and using experimental methods.

As mentioned earlier, certain behaviors (decreasing water use and waste, buying organic goods and locally produced meat) and indirect actions (donating money, participating in voluntary work and avoiding purchasing goods from companies with poor track records on corporate social responsibility) got lower intention from students than other behaviors and actions. These behaviors and actions can be promoted with Community-Based Social Marketing. As mentioned in the learning method section, steps of Community-Based Social Marketing includes selecting activities to be promoted and identifying barriers to the activities and designing a strategy to overcome these barriers and applying strategies to small segments of community and evaluating the impacts of strategy (McKenzie-Mohr, 2000). Other researchers (Gollwitzer, 1999, Arbuthnott, 2009) argued that courses focusing on specific domains would encourage students to have an intention to specific behaviors and make implementation plans. So, some courses focusing on consumption, conservation and participating in voluntary activities might encourage students to take action in these domains. As mentioned in the literature review section, Skamp et al. (2009b) found that certain behaviors such as using energy efficient appliances, buying ecological food and installing insulation at home can be encouraged by belief of effectiveness of that behavior. Kaiser and Fuhrer (2003) argued that effectiveness knowledge is missing among the public. Thus, learning effectiveness knowledge would encourage students to change their behaviors effectively.

Social norms and an infrastructure compatible with sustainable development were one of the main barriers often mentioned by CEMUS students and coordinators. Gifford (2011) argued that these barriers can be overcome by spreading new social norms through social networks and creating enabling infrastructure. Changing infrastructure and spreading new social norm can be perceived as indirect action.

Visualization exercises together with learning effectiveness knowledge would help many students who stated their main obstacles as not knowing where to start, missing action plans, or lack of knowledge about different behavior options. The steps of visualization not only investigates “where are we now?” and “where are we going?” but also “where do we want to be?” (vision statement) and “how do we get there?” (action plan) (Frisk and Larson, 2011). Learning effectiveness knowledge would help students to know which behavior options will be suitable and effective to their own vision so that they can make a good action plan.
Many learning methods mentioned in the learning method section stressed that collaboration and interaction with a learner’s community and stakeholders are one integral part of learning. Brody and Ryu (2006) argued that courses focusing on a small spatial scale, like community or region, are more effective than those focusing on a larger scale when it comes to encouraging behavior and action towards SD. Darner (2009) and Ryan and Deci (2000) argued that satisfying the need to feel a sense of belonging to a social group encourages self-determined behavior. Interaction with a social community would satisfy this need. Four CEMUS courses studied in this thesis have project work as one of the main assignments. In general, however, their project works are missing in communication with communities and stakeholders, and implementation in the real world. In the questionnaire analysis, their intention to participate in volunteer work was the second lowest among indirect action variables. Their intention to participate in volunteer work might be better encouraged throughout their project work if they interact with their own community and stakeholders such as NGOs, government and companies. This can also increase the course impacts on the real world. If it’s not possible to communicate with community and stakeholders, role-playing can be a substitute. Through role-playing they can indirectly experience the communication and interaction with stakeholders (Maier, 2007).

7.9. Conclusion

The goal of ESD is creating “a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation.” (UNESCO Education Sector, 2006, p.4) It was stated in the book published by CEMUS, “The mission of CEMUS is to facilitate and encourage as much knowledge gain, as much critical thinking, as much reflection as possible and to make it easier for students to act on these insights if such an urge arises.” (Hald, 2011, p.28)

The main finding of the questionnaire analysis indicated that CEMUS students’ willingness to pay for environmental costs, decreasing water use and waste, and participating in volunteer activities were very low. This can be improved through education focused in this domain and project assignments in which students communicate and interact with stakeholders.

The CEMUS coordinators had a lack of knowledge about the relationship between knowledge and attitude as well as attitude and behavior. It was also found that locus of control, a positive way of addressing SD, and the four different kinds of knowledge have not been implemented at CEMUS.

Further research can be made on the students’ four different kinds of knowledge and its relation to behavior and action towards SD. Students’ locus of control can be studied in more detail with more questions. In the future, each variable can be checked twice, at the beginning and end of the course, in order to see the effect of the course.
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Appendix 1 - Questionnaire

A. Age: _____ years old, Sex: female / male

B. What country are you from?: _________________________________

C. Occupation: working / bachelor student / master student / exchange student / Other

D. How many courses have you taken other than this course at CEMUS?
   0 / 1 / 2 / 3 / 4 / more than 4

E. What is your major (main subject of study)?: ________________________________

F. What are you taking now in Cemus?
   Actors and strategies for sustainability / Climate Change Leadership / Sustainable Design / Sustainable development Project course

G. Where did you grow up?: urban area / suburban area / rural area

H. Please mark one option in response to each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>I agree totally</th>
<th>mostly</th>
<th>a bit</th>
<th>not</th>
</tr>
</thead>
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<tr>
<td>1. I was interested in sustainable development issues before taking this course.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2. Global warming is happening.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3. I am self-critical to my attitude and behavior.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4. I feel sorry or bad about environmental problems.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5. I feel sorry or bad about social injustices in the world.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6. I believe we can create a sustainable future.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7. Technology is the main solution to problems regarding sustainable development.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8. I know how to act to lower my impact on the environment.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9. I think I have the ability to bring about change through my own behavior.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10. I recognize the benefits of personal efforts for sustainable development.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>11. There is some discrepancy between what I should do and what I do.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>12. I gain skills related to seeking sustainable solutions from this class.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>13. This course develops my critical thinking about society and environment.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>14. This course helps me develop cooperation skills.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>15. This course widens and deepens the boundaries of my concern. (e.g. local, national, global)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>16. This course changes my attitude towards environment and society.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>17. We need stricter laws and regulations to protect environment.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>18. Even if it took me longer and was more inconvenient, I would try to use bicycle or public transportation instead of car.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
19. Providing more of our energy was produced from renewable energy, I would be willing to pay more for electricity.

20. To save electricity, I switch things off at home when I don’t need them.

21. Even if it means that I don’t always have the latest products, I would be prepared to buy new things less often.

22. Even if I really liked meat, I would eat fewer meals with meat in them.

23. Even if it was more trouble for me, I would recycle things rather than just throw them away.

24. Even if it was more expensive, I would buy ecological or organic goods.

25. I try to avoid purchasing products from companies with poor track records on Corporate social responsibility.

26. I try to purchase locally produced products.

27. I have changed to environmentally friendly light bulbs.

28. I have changed my personal lifestyle to reduce waste.

29. I try not to use disposable products (e.g. paper cups, disposable batteries)

30. Even if it’s inconvenient, I try to reduce my water use.

31. I participate in voluntary work regularly.

32. I donate money for social or environmental causes.

33. I talk to friends or family about what I’ve learned about sustainable development.

34. I would vote for a politician who said they would bring in laws to reduce global warming, even though it would stop me doing some of the things I enjoy.

35. I would vote for a politician who said they would increase taxes to pay for reducing global warming, even though it meant me having less money to spend.

36. I will actively participate in a social movement working towards sustainable development.

37. I would get a job related to sustainable development, even though I get paid less.

38. What is the main barriers for you to act or change behavior towards sustainable development?
## Appendix 2 - Questionnaire Respondents’ demographic

<table>
<thead>
<tr>
<th>Course name</th>
<th>Frequency</th>
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<th>Cumulative Frequency</th>
<th>Cumulative percent</th>
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<tr>
<td>PRO</td>
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<td>7.09</td>
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<table>
<thead>
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<th>Frequency</th>
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<tr>
<td>above 30</td>
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<td>14.68</td>
<td>16</td>
<td>14.68</td>
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<tr>
<td>20-29</td>
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<td>85.32</td>
<td>109</td>
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<table>
<thead>
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<th>Sex</th>
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<th>Cumulative percent</th>
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<tr>
<td>Female</td>
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<td>53</td>
<td>47.32</td>
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<td>11</td>
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<td>South America</td>
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<table>
<thead>
<tr>
<th>Developing or Developed country</th>
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<th>Cumulative percent</th>
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<td>55.56</td>
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<td>Developing country</td>
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<tr>
<th>Occupation</th>
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<td>48.65</td>
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<td>exchange student</td>
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<td>96.4</td>
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<td>master &amp; exchange student</td>
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<td>2.7</td>
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<td>Working &amp; bachelor &amp; exchange student</td>
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<td>0.9</td>
<td>111</td>
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How many other courses they have taken in CEMUS?

- 69 -
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<td>5</td>
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**Major of study**

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**Courses taken this semester**

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**Growing up area**

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Appendix 3 - IMF advanced economies

According to the IMF the following 35 economies are classified as "advanced economies":

- Australia
- Austria
- Belgium
- Canada
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hong Kong
- Iceland
- Ireland
- Israel
- Italy
- Japan
- Luxembourg
- Malta
- Netherlands
- New Zealand
- Norway
- Portugal
- San Marino
- Singapore
- Slovakia
- Slovenia
- South Korea
- Spain
- Sweden
- Switzerland
- Taiwan
- United Kingdom
- United States
Appendix 4 - CEMUS course literature

1) Actors and strategies for change towards global sustainabilities

- Hawken and Paul, Blessed Unrest; How the Largest Social Movement in History is Restoring Grace, Justice, and Beauty to the World
- Course Reader: The course reader is a series of articles, essays, reports and newspaper articles that will cover, lecture by lecture, relevant topics discussed during the course.

2) Sustainable development-project course

- Starke and Mastny, red, State of the World 2010 –Transforming Cultures from Consumerism to Sustainability
- Lilliesköld and Eriksson, Handbook for small projects
- Suzuki, The Sacred Balance – Rediscovering our place in nature
- Course Reader
- Project specific material (students find themselves)

3) Climate change leadership – power, politics and culture

- Anthony Giddens, The Politics of Climate Change
- James Hansen, Storms of my Grandchildren
- Mike Hulme, Why We Disagree about Climate Change
- Course Reader

4) Sustainable design – ecology, culture and huma built worlds

- Parr, Adrian, Zaretsky, Michael, New Directions in Sustainable Design
- Orr, David, The nature of Design: Ecology, Culture and Human Intention
- Course reader