UNIVERSITY OF
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EDUCATION FOR SUSTAINABLE DEVELOPMENT IN HIGHER EDUCATION

Students' perspective and experience during a Masters programme in ESD at University of Gothenburg

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Abstract

Aim: This thesis is an endeavor to explore Education for Sustainable development practiced in Higher Education. The study aims at exploring the students' learning experience during an online Masters in Education for Sustainable Development taught at University of Gothenburg. It investigates how an ESD masters program have shaped or developed students' sustainability consciousness SC, and what competencies they have achieved during this Masters programme. The analytical foundation of this thesis is the perspective of students about the educational practice as seen from inside.

Theory: The conceptual framework is guiding the entire process of conducting this study. The concept of Education for sustainable development ESD presented by UN for 2030 agenda for Sustainable Development SD is used as lens for this study. The characteristics of Education for sustainable development are followed to understand the students' learning experience. The theory of Competence based Education CBE and the model of competence-based learning are used as theoretical reference. Acquisition of crucial competencies required for Higher Education by the students is the focus of analysis.

Method: Methodology involves case study design using semi-structured interviews as the data collection method of choice. In this study 7 participants (3 from year II, 2 in year I, and 2 alumni) were included. They are enrolled in Masters programme in Education for sustainable development at University of Gothenburg.

Results: Data reveals a broad and varied students' understanding of ESD, the acquisition of sustainability consciousness SC and evidence of developement of certain competencies that are crucial for graduates to achieve in higher education (i,e., critical thinking competency, system- thinking competency etc). Results showed pros and cons of delivering ESD in a digital environment, pointing out political influence on creating a huge chaos for the need for delivering education under sustainable development or sustainability. The study suggests enhancing crucial component of human interaction that is improved face to face interacting sessions and need practical knowledge and experience of ESD implementations.

Acknowledgments

Preface

I cordially invite readers to look at this piece of writing that is an endevaur to unfold an important field of global interest that is orignated from emphasis on Environmental education and emerged as Education for sustainable developement now a days with its specification to higher education institutions HEIs. An emphasis on sustainable developement SD and Education for sustainable developement ESD specially in the context of education in Sweden was noted and became a point of reference as well as the motivating factor for this study. It started when I enrolled in IMER program and with time I acknowledged the importance of ESD to think and act on sustainability drew my attention towards Sustainability consciousness and education taken under graduate programmes at universities and specially on the exploration of the role of HEIs in promoting sustainability awareness among graduating students. It focused on studying a programme that is exclusively claiming to provide Education for sustainable development. Although it was a question mark for me whether it is the education *for* sustainable development or a collaboration of education *and* sustainable development. The reason for focusing on students' experience and perspective is my personal preference of looking from inside because I consider students as central to all educational activities and graduating students are future actors within different fields. So I perceive students' need, preferences, perception as central for all educational activities. Other focal point for the presented study is to explore a digital learning environment because of Covid-19, When everything was tranformed to digital module and it effected our programme IMER session 2020-2022 that is not a digital programme but it was delivered online. It was first digitally delivered IMER session where teachers and all students from around the globe were engaged in online classroom, and it was my first experience of distant online education.

List of abbreviations

SD   Sustainable Development
ESD   Education for sustainable development
SDGs   Sustainable development Goals
HE   Higher Education
HEIs   Higher Education Institutions
SC   Sustainability Consciousness
GU   University of Gothenburg
UN   United Nations
DESD   United Nations Decade of Education for Sustainable Development declarations
UNESCO   United Nations Educational, Scientific and Cultural Organization

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Chapter 1

Introduction

Education is considered to have an important role to play to achieve sustainable development. There has been a great emphasis on the inclusion of sustainability and environmental elements into tertiary curricula (Thomas, 2009). To meet the challenges of sustainable development, higher education HE can play an important role because it has that potential to bring about that change (Karatzoglou, 2013); (Owens, 2017). There are many universities that have developed undergraduate and graduate programs with a designed curricula with sustainable development in mind. University of Gothenburg has also incorporated sustainable development in pre-existed curriculum in various departments under green-washing or green-labelling. Venkataraman (2009) suggested the importance of continuous assessment of these programs with time and the need for a collaboration of educational researcher with educators to perform an authentic assessment of educational programs embracing sustainable development and to look at the outcomes of the programmes. So that they can come up with curricular informs and best practices to promote sustainable lifestyles and practices (Venkataraman, 2009).

In the light of the emphasis on HEIs for incorporating ESD and considering students as the central element in teaching-learning process in building knowledge (Draghici, 2019), it would be interesting and worth investigating into Masters in Education for sustainable Development taught at Gothenburg University, Sweden that is a unique masters programme that is developed to provide an opportunity to students to develop their knowledge and skills and to systematically and scientifically study ESD. It aims to develop the students' ability to critically reflect upon sustainable development so that they can design and evaluate educational initiatives towards sustainable development. This is a particularly online program that has been designed to strenghten students' skills and abilities within educational context.

This thesis is an endeavour to explore the perspective and experience of students during an online degree programme i,e,. Masters in Education for sustainable development taught at University of Gothenburg. This is a study that is conducted using students' stand point during learning in an higher education institution i,e., University of Gothenburg. The purpose of this thesis is to investigate the students' understanding about the concept Education for Sustainable Development ESD, inquiring their sustainability consciousness and the acquisition of competencies that are crucial for graduates to achieve in higher education, through this Master's program. It is a case study that is based on students narrative regarding their experience and perspective about the Masters in Education for sustainable developement.

I want to make clear to reader at this point that it is not an attempt to assess the program, as it needs a bigger frame work to study an educational programme from various stand points (i,e., teachers, students, syllabus, policy makers and stakeholders). Rather it is a study to explore students perspective about the learning experience during their Masters from Gothenburg University. It is an attempt to look at the programme from students' views to understand what skills, competencies and consciousness they have achieved during this programme.

Aim of the study

The aim of the study is to explore students' experience and perspective about Masters program in Education for Sustainable Development taught at Gothenburg university. The purpoose is to examine Education for sustainable development in higher education institutions. Students' opinions and learning experiences in an online environment will be investigated through conducting semi-structured interviews. The study will explore how the programme has helped the students in devlopeing the skills and competencies that can help them to contributing towards sustainability issues.

Research question(s)

Q1: What were the expectations of students pursuing Masters in Education for Sustainable development before joining the program?

Q2: How was their learning experience during this online program and what challenges did they face?

Q3: How do they see the outcomes or impact of this program in developing their sustainability consciousness and competencies that are crucial for ESD?

Background

We can not acknowledge sustainable development without understanding the term 'sustainability' as it is the base of SD (sustainable development), EfS (Education for sustainability), and ESD (Education for Sustainable Development). The concept of 'Sustainability' is not new to recognise but from few decades it is immensely used in accordance with environment, economics, and particularly with education. Sustainability was firstly associated only with environmental education and now it has got much more attention and focus in various fileds of study (Venkataraman, 2009). Sustainability has been the most critical issue of debate, and it has been considered as a major global challenge for several decades. Sustainability was intially used as a term – as how we should protect Earth's natural environment and resources while creating prosperity and well-being for an increasing population (Holden et al., 2017).

The concept of sustainability is incorporated within the field of education many years before when United Nations UN declared 2005-2014 "the decade for Education for Sustainable Development" DESD. UNESCO the specialised authority for Education declared by the United Nations has put a strong emphasis on the responsibility of the field of Education in relation to the Sustainable Development (UNESCO, 2004). The rising debates on the field of education with respect to sustainability in higher education gave rise to the new terms 'Education for Sustainability' (EfS) and 'Education for Sustainable Development' (ESD).

There has been put an emphasis on inclusion of sustainability and environmental elements into tertiary curricula (Thomas, 2004). To meet the challenges of sustainable development higher education HE can play an important role because it has that potential to bring about that change (Karatzoglou, 2013; Owens, 2017). Universities can provide the expertise that is needed in relation to sustainable development goals (SDGs), and thus are to play central role for being able to integrate different disciplines, from natural science to economics and from health to social sciences (Nizinska, 2019). Universities are considered important for providing communicative education that makes the learning society and not only producing desired skills required by economics for the career enhancement (Nizinska, 2019). Many international events and increasing number of sustainability programmes in reputeable universities around the globe show prominence of sustainability education (Wiek et al, 2011).

ESD and Higher Education

The Talloires Declaration of 1990 was an initiative towards an international movement of Higher Education Institutions (HEIs) that oblige effective learning processes related to curriculum and initiatives that reflect Sustainable Development. UN General Assembly in 2002 has annouced the United Nations Decade of Education for Sustainable Development (2005-2014) and highlighted *education as key factor in achieving sustainable development* that was accepted by over 50 countries around North America to Europe to Central Asia. To prepare individuals who can engage or deal with sustainablity related issues a change of perspective is required, that means a reorientation towards 'Education for sustainable Development' is essential. In this context International Association of Universities (IAU) set sustainable development as their priortiy theme to address and implement. Higher Education plays an important role in dealing with sustainable development and sustainability related challenges (Owen,2017). Universities have been considered as crucial contributors in the struggle of achieving regional sustainable goals for more than two decades (Karatzoglou, 2013). Sustainability in higher education is considered as an emerging paradigm in education, its goals are to get an in-depth understanding of human and nature interaction (Kishita et al., 2018). It is different from other disciplines because it provides practical solutions to the related problems, because of having the characteristics such as interdisciplinarity and problem-solving orientation.

After declaring the decade of Education for Sustainable Development (DESD), UN was reviewing and monitoring all the activities and progress going on within HE institutions, multiple networks and frameworks were established for HE bodies. Through past two decades, various universities around the world have started taking initiatives towards implementing ESD in pre-exsiting programs, courses and educational activities (Faveeda, 2010). Higher Education for Sustainabe Development (HESD) aims at generating knowledge as well as it focuses to enable the students to reflect upon the issues related to sustainability, global perspective of responsibility, complexity of behaviour, and decisions for the future (Riekmann, 2012). As enrollment in higher education has been increasing rapidly, higher education institutions (HEIs) have a fundamental role towards a sustainable future by transforming socities (Berchin et al., 2021).

It raises the question of ESD integration in tartiary curriculumn. (Valderrama-Hernández et al., 2019) argue that there are various disperse ideas about how ESD can be implemented and how it should be integrated in higher education. Despite of diversity of existing proposals about different approaches of ESD to help students developing an understanding of sustainability problems, and finding their solution, there is still lack of an actual large-scale implementation of Sustainable Development. They suggested to consider competencies as critical and crucial to be developed by the students in the teaching-learning process, and an analysis is also necessary to check whether these competencies are acquired by the students or not?

Literature showed that the university graduates are not skilled enough to tackle sustainability problems (Wiek et al., 2011). Key competencies can guide through designing courses and programs related to sustainability, it also guides through the process of evaluation, hiring, and training faculty, and staff (Wiek et al., 2011). A study of improvement on sustainability competencies should be done under learning taxonomy (Valderrama-Hernández et al., 2019). Literature suggests that there should be a comprehensive study to explore sustainability competencies among university graduates because they will perform activities that will contribute to a sustainable future. Considering the study gaps and an emerging need to assess programmes taught at HEIs in terms of developing competencies and sustainability consciousness among students this study is designed. It is an attempt to get an insight of students' experience at one of the ESD delivering programme at university level, that is Masters in Education for sustainable development offered by University of Gothenburg.

Thesis Organization

This thesis is composed of five chapters and each chapter includes various sections.

Chapter one introduces the topic by providing a brief background of the field. In this section I have problematized the topic of the thesis and highlighted the need for this research. It contains the rationale of the research, and then it has the proposed research questions. Lastly, I have provided the thesis structure, that contains the given information in each chapter through out the thesis.

Chapter two consists of two sub-sections. Firstly, it presents the theoretical framework and the guideline that is used for this thesis. The study is done under two dimensions, one is the concept of Education for sustainable development and the other conceptual framework is the Competence based learning. Second section is the literature review that contains previous research on the topic that establishes the connectivity to the previous research as well as it motivates the need for this study.

Chapter three presents the methodology of this thesis, that include various sections. Firstly the choice of data collection method is explained, semi-structured interviews are used to collect detailed information from the participants. The procedure of interviews is described here then comes the sampling, that is also presented with the tables showing the demographics of the participants. Next section of this chapter is the analysis and interpretation that explains the procedure of analysis and extracting the results from collected information through interviews. It comes with the detailed use of Thematic analysis and how these themes are interpreted to find the answers to the research questions. Then the section of ethical considerations is provided and the next section is ESD statement maintaining the relevance of the study to Education for sustainable development. This section ends with the introduction of the understudied programme 'Masters in Education for sustainable development' offered by the University of Gothenburg.

Chapter four presents the findings of the study that has various sub-sections showing the results (findings) of the study. Among them the focus of the study are 'Understanding of Education for Sustainable Development, Sustainability consciousness and skill development, acquisition of crucial competencies and the section of digital experienced, classroom environment.

Chapter five presents the discussion, conclusion and it also contains section of the recommendations/ suggestions for further research on the topic.

Chapter 2

In this chapter I present the theoretical and conceptual frameworks that guided the entire research process. In addition I provide the connection between the concept of Education for sustainable development with the frameworks used in this study that illuminates the picture of Education for sustainable development in higher education institutions HEIs.

Theoretical framework

The Competence based education or CBE that is rooted from multiple learning theories such as behaviorist, functionalist, and humanistic learning theories is taken as theoretical framework for this study. CBE has taken concepts from various modern learning theories and its foundation is the student-centred approach. CBE emphasize that the students should learn the theoretical foundation and should be able to understand how to apply their learning to practice (Riesman, n.d.). It is a student-centred approach and it prepares the student to act their role in the society. Literature shows that CBE model constitute mainly upon outcome by using strong pedagogy, interdisciplinary resources and focuses on assessment of student achievement of competencies (Albanese et al., 2010)(Gervais, 2016; Johnstone & Soares, 2014). It advocates the importance of preparing the students to apply their learning to the practical situations and finding the solutions to the real-world problems.

The term 'competence' is used as verb, that refers to 'the ability to do something' that is originated from the most often used 'four pillars of education' presented in the UNESCO Report Learning: the Treasure within (Delor, 1996). Where competence refers to 'learning to know, learning to do, earning

to be, learning to live together'. There are other various vague and ambiguous definitions and understanding of competencies such as linking this terminology with abilities, capabilities, capacities and qualification. Some defined it as 'functionally linked complex of knowledge, skills, and attitudes that enable successful task performance and problem solving' (Wiek et al. 2011).

While taking education for sustainable development into account, the literature shows a great emphasis on competence based learning approach. In this approach students are of central importance as they are considered to be who build the knowledge. Students are called the crucial actors in teaching activity (Valderrama-Hernández et al., 2019 (Wiek et al., 2011). The development of skills and competencies in university students has grown exponential over the past 15 years (Scherak & Rieckmann, 2020). This change in focus happened due to the shift in approach from teacher-centred to student-centred by using competence framework. There is evidence of critical role of key competencies that provide a framework to develop recognizable profiles of institutions, graduates, the professions and so on. Key competencies also provide a reference scheme to evaluate learning and teaching effectiveness of program and courses (Wiek et al., 2011).

The explanation of competency related to sustainability education is stated in report on ESD in higher education in some European countries presented by Sweden is as follows (Wals, 2007b):

> "The competency required for SD is manifold, but the basis of it is relevant knowledge and an ability to think, act and take responsibility out of a holistic understanding of the preconditions of life on earth in a global perspective. It includes the ability to continuous learning from others and the ability to cooperate over disciplinary and professional borders, to think and analyse critically and to solve problems seeing possibilities and limitations in ones professional role. An important ability is also that of complex thinking and using specialists for different areas. Leaders need to have the ability to create enthusiasm and to think in new creative ways."

Competence-based learning integrate knowledge, skills and attitudes and result into a behaviour that effect in the context of sustainability, it include its theoretical backgrounds, methodological capabilities and moral values. Sustainability competencies proved to have transformative impact as they enable people to critically evaluate current policies and practices and prepare them to take decisions and contribute to change (Mochizuki & Fadeeva, 2010). Development of competencies is a prerequisites for sustainable developement to make informed decisions, planning and carrying out interventions. Competencies-based learning is crucial for the achievement of ESD as it plays an significant consolidative role (Valderrama-Hernández et al., 2019). They argued that this type of learning connects knowledge, skills, attitudes and behaviour towards sustainability. It has emancipatory and transformative impact. Thus teaching-learning methodology should be interrelated with them or it should be considered as of second important factor for effective ESD.

The concept of competence is influencing ESD discourses and practice globally (Mochizuki & Fadeeva, 2010). Skills such as interdisciplinary thinking, problem solving, team working, and holistic thinking are needed and above all critical thinking is crucial to sustainability (Thomas, 2006). Sustainability competencies are referred as the abilities or competencies that are crucial for people to have, those who confront sustainability challenges.(Valderrama-Hernández et al., 2019) suggested that sustainability competences should be introduced into the curricula of all degree programs because it can prove to be a powerful tool in university education and graduates will perform their professional duties towards sustainability challenges.

The concept of competence based education or competence-based learning coincide with the "ESD Goals and Learning Objectives" presented in UNESCO report. A list of key competencies crucial for sustainability that must be developed in all degrees are mentioned as follows:

- Systems thinking competency

- Anticipatory competency

- Normative competency

- Strategic competency

- Collaboration competency

- Critical thinking competency

- Self-awareness competency

- Integrated problem-solving competency

(UNESCO, 2014)

Draghichi (2019) presented the description of these key competencies, extracted from different studies through reviewing literature. These are the general agreed key competencies that are of great importance for thinking and acting for supporting sustainable development. Those competencies are as follows:

Key competence	Description
1. Systems thinking competency	The ability to recognize and understand relationships, analyzing complex systems, understanding how systems are organized across different dimensions, and dealing with uncertain situations.
2. Anticipatory competency	The ability to identify and evaluate possible, probable and desirable future, construct future vision, taking precautionary measures, evaluate the consequences of their actions and dealing with risks and resolving problems
3. Normative competency	The ability to understand the principles and values that underlie one's actions in the context of conflicts, transactions, ambiguous information and conflicts and to negotiate and reflect on sustainability values, principles, goals and objectives
4. Strategic competency	The ability to implement collaborative and innovative efforts to improve sustainability at local and development levels.
5. Collaboration competency	The ability to learn from others; understand and respect the needs, perspectives and actions of others (empathy); understand, relate to and be sensitive to others (empathic leadership), resolve group conflict; and facilitate collaborative and participatory problem-solving
6. Critical thinking competency	The ability to question standards and ideas of practice; Reflect on personal values, ideas and actions; and accept positions in sustainable discourse
7. Self-awareness competency	The ability to reflect on one's own role in the local community and (global) society, constantly evaluate, monitor and motivate own actions and cope with one's own feelings and desires.
8. Integrated problem-solving competency	Integrating the above capabilities- applying multiple problem-solving frameworks to complex sustainability issues and the overall ability to develop sustainable inclusive and equitable solutions that promote sustainable development.

These competencies are regarded essential to educate sustainability principles to graduating students in HEIs. Students are considered future actors for promoting sustainability so programmes curricula must address them in the structure, content, and modules of different courses. Above mentioned competencies have emacipatory and tranformative impact and are mutually interdependent.

Conceptual framework

Education for sustainable development

The conceptual framework used for this study is the concept of Sustainable development in the context of Education that is known as Education for Sustainable Development i.e., ESD. This study is carried out in the light of the provided literature on Sustainable Development and Education for sustainable development ESD, acknowledging all the criticism and skeptic ideas of different researchers.

Education for sustainable development is difficult to define because of the complexity of the concept of sustainability as well as sustainable development. There is no one agreed definition of sustainability or sustainable development and like wise for Education for sustainable development. To be sustainable can simply mean many things to different people. Sustainability issues are complex, and it generated numerous definitions of sustainable development from different disciplines. The polysemic nature of this concept made it a contested concept to define and to refer. The aim of this study is not to look at a perfect definition or finding out whether the criticism is correct or not, rather the sole purpose of this study is to explore what students of ESD Masters programme percieve about the concept of ESD and the programme specifically. What they learnt from the courses and how they are implementing in their lives to act according to sustainability issues. So I would remain the window open instead of narrowing down to a specific definition and will present different perspective on this concept.

The concept of Education for Sustainable Development has gone through criticism and it is being argued that education for sustainable development is policy driven. Many politically engaged scholars reflected some warnings and risks about the term Sustainability and Education for sustainable Development ESD for being co-opted by a global neoliberal imposing economic agenda that is promoting 'one-size-fits-all' framework upon the world (Jickling & Wals, 2008). UN policy document about sustainability was criticised for being written in the context of rich countries. For many it was a *'a vague slogan susceptible to manipulate'*, some considered it logically inconsistent (Jickling, 1992) and called it a contested concept (Wals & Jickling, 2002).

Jickling (1992) considered education for sustainable development an idea that is contrary to the spirit of education. He has shown scepticism about the coherence and efficacy of the term. Some scholars referred sustainability as 'wicked problem', that is difficult to solve because of its complexity and interrelatedness of the concept (Nazinska, 2019). Jickling and Wals, (2002) found that the agenda of the sustainable development within environmental education is problematic. Jicking (1992) perceive ESD as a end product and being influenced by globalized forces. They have created a heuristic for the curious educators investigating education for sustainable development debate. They suggested that the education should encourage the students to be able to debate, evaluate and judge for themselves, using heuristic as a critical tool. Students should adapt, develop, and re-invent the heuristic according to their need in the evaluation of global issues like health, social justice, and development (Jickling, 1992; Jicking & Wals, 2002). Although the concept of sustainability is vague and ill-defined in nature, a continuous effort is needed to define what is actually a more sustainable future (Nazinska, 2019).

Here I will present few definitions from the literature as well as their connection with the agenda for 2030 with Sustainable Development Goals as provided by UN, to guide the reader what can ESD possibly be about.

First attempt to conceptualize sustainable development was the United Nations Conference that was held in Stockholm in 1972, in which it was being emphasized that there should be maintained a balance for the need of promoting quality of life for all, at the same time considering the exploitation of natural resources in a sustainable way (United Nations, 1972). In the Brundtland report, sustainable development is refined through interweaving environmental, and socio-economic issues. This report provided a definition of SD that is

> *'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs'* (WCED, 1987, pp. 43).

An implementation strategy for SD incorporating in education was created through international collaboration (UNESCO, 2006). SD has defined initially through three dimensions, that include environmental, economic, and social issues regarding Sustainable future. These three dimensions were further divided in fifteen sub-themes to define SD in an educational context (UNESCO, 2006). The specific SDGoal 4 is 'Quality Education', which aims to "*ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*". SDG4 is 'Quality Education' that indicates that all students should achieve the knowledge and skills necessary to promote sustainable development (UNESCO, 2017).

Draghici (2019) presented Education for sustainable development as an

> 'Education that enables the learner to take informed decisions and actions for environmental integrity, economic practicality and a just society, keeping in mind the present, and future generations as well'.

Annan-Diab & Molinari (2017) define sustainable development with the characteristic of integrating several desciplines for example environment, biology, medicine, nutrition, agronomics, geography, engineering, architecture, citizenship, sociology, psychology, political science, history, law, economics and business. That make interdisciplinarity an important characteristic of the education for sustainable development. According to (Thomas, 2009) education for sustainable development provides environmental awareness and it encourages critical thinking among students to build and develop sustainable communities. The study will use these definitions and directions to explore the learning experience of the students of Masters in ESD and look at the outcome of the programme in terms of understanding the term ESD and sustainability issues.

Characteristics of ESD

The term ESD is originally a political term that is not generated through any philosophical or educational endeavour, and its characteristics are also defined and explained by the presenting authority that is UNESCO. I found it appropriate to guide this study through these characteristics.

According to UNESCO ESD is defined under the principles and values described by SD;

- It covers all three dimensions of sustainability-environment, society, and economy.
- It encourages life-long learning
- It is relevant to the local cultures
- It deals with formal, non-formal, and informal education
- It focuses on local needs and priorities while acknowledging international consequences for the efforts to fulfil local needs.
- It engages knowledge of the concept of sustainability and its evolving nature.
- It involves community in decision-making, it builds social tolerance, workforce and improves quality of life.

- It has interdisciplinary nature, through which all disciplines contribute to meet global challenges and issues.
- It promotes higher-order thinking and uses different pedagogical techniques for participatory learning.

<div align="right">(UNESCO, 2005, pp. 30)</div>

In the light of these characteristics students' views and understanding about the Masters in ESD is explored in the presented study.

Literature review

The literature related to this study was searched on google scholar and data search engines. Literature was obtained while searching for Education for sustainable development. That resulted in finding quite high number of articles, and books with vast diverse topics. Then the following key concepts are used to narrow down the focus (Education for sustainable development and higher education, sustainability education in universities, competencies required for ESD and University taught programs and ESD). Next step was to short-list the literature by reading abstracts of the articles for the final selection of articles and literature used in this study. Articles and books were selected for being most relevant and up to date publications were mainly included in the study to understand the research already done on the topic. The purpose of this literature review was to find the role and effectiveness of sustainability programs taught at universities around the globe and understand the students perspective on it.

Education and sustainable development

The importance of education as a key instrument for achieving the Sustainable Development Goals (SDGs) is evident from recent UNESCO document describing "Learning objectives" for Education for Sustainable Development. According to one part of SDG4 Sustainable Development Goal, under 'Quality Education', 'all students must acquire the knowledge and skills necessary to promote sustainable development (UNESCO,2016). For many years the term Environmental education have been used to promote the relationship of education with the awareness and consciousness of sustainability by securing the environment for future. Education for sustainable development emerged with the focus on the role of education on the social and economical issues with relation to the environment. The importance of SD in education is emerged from a conference on environmental education in Tbilisi 1977 (UNESCO, 1978), and later on further discussed and developed through Brundtland commission report (WCED, 1987), the Rio conference in 1992 (UN,1992) to the UN resolution establishing the United Nation DESD), (UN, 2002).

ESD is defined as a field of research that focuses on the implementation of sustainability in the existing curricula and academic activities going on in the HEIs (Berchin, 2021). ESD aims at supporting and improving lifelong learning towards acquisition of knowledge, skills, and values related to sustainability, it also promotes awareness in society about SD and its challenges.

Role of higher education insitutions

Higher education institutions (HEIs) have been consistently considered as significant contributors to education for sustainable development for the last two decades (Karatzoglou, 2013; Wals, 2014; Nizinska and Kurantowicz, 2019). In 1990, the Talloires Declaration gathered all the efforts and actions the university leaders have taken from all around the world to implement sustainability in HEIs. They have been referred as agents of change and they must play an important role in development and implementation of sustainable practices. HEIs have a growing social demand to lead a change for sustainable development by adopting such practices that make them models of good practice (Ramos et al., 2015). This guided these institutions to implement sustainable practices in the

teaching models to practice in the campuses (Lozano et al., 2013). As it is crucial to reform academic curricula, universities have developed many programs and courses according to the emerging need of promoting Education for sustainable development (Azeiteiro et al., 2015; Boman and Andersson, 2013).

There is an emerging focus on programs and courses taught at HEIs that should enable students to develop sustainability consciousness and various competencies so that they can solve real life problem in future to contribute to sustainable future, a sustainable world. The aim of this literature review is to provide an overview of all efforts and operations taken for incorporating Education for sustainable development in Higher Education institutions. Moreover, it focuses on the Sustainability Consciousness that should have developed under Education for sustainable development and explores what competencies are crucial for ESD among graduating students to achieve.

Karatzoglou (2013) has provided a review of articles published between 2003-2011 after the declaration of DESD by UN. This review showed that there is a wide range of regions, topics, methodologies, and findings focusing on ESD research publication. Literature revealed that the theoretical and case study method has been used widely in the previous studies (Karatzoglou, 2013) . It found that most of the authors considered sustainability initiatives, a problem that calls for a solution. The study concluded that because of multidimensional and complicated nature of Sustainable development, there is a need for interdisciplinary approach and trans-disciplinary problem-solving processes.

Hernandez et al, (2019) presented a methodology to evaluate the acquisition of sustainability competencies in students of higher degree in the field of education and to determine if the students have achieved their learning objectives according to the requirement of ESD. They have used case study methodology for their research. They included 104 first-year students and 86 fourth-year students from the Bachelor Program in Primary Education Teaching at the University of Seville. This study was conducted using the sustainability survey through which two student groups were compared for results and for that purpose Mann-Whitney U test was used. Although the results show that students failed to attain their ESD learning objectives and students work does not reflect that they are being trained under sustainability.

Sweden as a country is well known for being successful in incorporating Education for Sustainable Development (ESD) in its education system and for being actively aligned with global agenda for a sustainable future (Cars & West, 2015). Swedish Government has put great emphasis on implementations on SDGs to move towards a sustainable society (*Voluntary National Review 2021 SWEDEN Report on the Implementation of the 2030 Agenda for Sustainable Development*, n.d.). Swedish has been successful in incorporating ESD in formal education as universities have included new approaches to learning as well as teaching in its pre-existed curricula also there are a number of courses and programmes labelled under green umbrella, the curriculum has been redesigned to incorporate ESD. Boman and Andersson, (2013) explored the eco-labelling of pre-existed courses and programmes at University of Gothenburg that guides students in selecting and opting courses. They found that approximately 30% courses and programmes are already eco-labelled, and it is increasing over years. They argued that eco-labeling is still new phenomenon for academics. University lecturers felt difficulty in integrating SD in their subject area as the result show that teachers training sessions was probably not efficient enough and they should be provided on the regular basis so that the teachers become fully aware of how SD would be integrated into their courses or programs. They suggested that a more systematic approach is needed to accelerate the university education system implementing SD.

Another similar study aiming at implementation and effectiveness of education for sustainable development (ESD) is done in Pakistan, which is one of its kind in Asia by Saqib et al. (2020). They have used survey method to collect data at a bigger level. Semi-structure questionnaires are used to check university students sustainability consciousness (SC). The results showed that there is a need of

more attention to integrate ESD themes in undergraduate programs in Pakistani HEIs. The study suggested a more focus on teachers training programs to boost teachers' knowledge of sustainability.

Azeiterio et al, (2015) studied 'Education for sustainable development through e-learning in higher Education' in Portugal that focuses on ESD effectiveness through e-learning in higher education. This was also a case study. Students enrolled in more than one programme in environmental and/or sustainability science were the participants of the research and their expectations and experience through e-learning in Portuguese Distance Learning University was the focus of the study. The result showed that the surveyed students experienced high level of motivation and satisfaction and they have reported an effective learning outcome in terms of knowledge, competences, values, attitudes in sustainability sciences. They concluded that formal e-learning programs at university level can be effective source of studies for being flexible, collaborative, and interactive form of learning.

Jones, Trier, and Richards (2008) did a case study on undergraduate programmes at University of Plymouth where they studied the teaching and learning challenges and opportunities related Education for sustainable development. They found that there is a support for the embedding of ESD in curricula and there is evidence of ESD related teaching and learning occurring in some of the programmes at the university but it is found that the term ESD is present as content instead of the pedagogy. Faculty is still uncertain about the meaning, scope, boundaries, application, and limitation of ESD term. It can also prove to be a risk is the low prioritization and reduction to the specific subject content by emphasizing on ESD as concept and practice.

Nizinska and Kurantowicz (2019) have reviewed the lack of conceptual agreement on what sustainability is, contradictory ideas of how to embed ESD in Higher education and its systematic contradiction with pedagogical challenges. They have concluded with a notion that there is a need to reform the system. The study highlighted dilemmas and critical reflections on the concept of sustainability. It is clear to see that sustainability is referred as 'wicked-problem', because the definition of it is vague in nature and 'ill-defined' and it needs to be addressed and HE is called a best place to address these issues. Many universities have introduced policy-oriented standard approaches to intervene SD in the occurring curriculum that hinder openness and cultural diversity, and it produces resistance in the process of implementation because it is usually perceived as a political agenda rather than social agenda in academic setting.

Sterling and Thomas (2006) studied schemas and views in ESD debate about 'capability' in the reference of Higher Education Institutions (HEIs) embedding sustainability in the curriculum. They suggested that academics can be guided through some emerging schemas in designing curricula for ESD. It highlighted a model of staged learning and change linking institutional change with deepening student experience. They suggested some generic skills that are critical for students to achieve, and they will need these skills while implementing sustainability. They referred these as characteristics of education for sustainability: Contextual, Innovative and constructive, focused and infusive, Holistic, Integrative, Process-orientated and empowering, Critical, Balancing, Systemic and connective, Ethical, Purposive, Inclusive and lifelong. These are refined later on and known as competencies that are considered crucial for graduating students to achieve at university studying under ESD influenced curriculum. Competencies for sustainable development and sustainability have also been studied by Mochizuki and Fadeeva (2010) explaining the significance and challenges for ESD. It is an attempt to highlight competence approaches, and it examined the adequacy of competence-based model that is being used as a source of achieving educational and societal transformation towards sustainability. They suggested that higher education institutions should experiment innovations and collaborate curriculum, teaching, research and the role of community.

Wiek et al, (2011) has conducted a study on key competencies in sustainability, in the form of literature review. Literature on key competencies that are crucial for sustainability was the focus of the research. It is to provide an institutional reference framework for designing new programs and revising and evaluating teaching and learning activities through ongoing programs and courses for hiring and

training faculty and staff. Key competencies are crucial for graduating student to achieve so that they can cope with current environmental, economic, and social issues of the world and they become able to contribute to a sustainable future. There are various competencies and skills that are critical to possess for students studying at universities. This paper is an attempt to accumulate all the competencies and similar terminology and a try to provide categorized and defined list of explored competencies. Most important and crucial competencies that are emerged from the literature review are; Systems-thinking competence, anticipatory competence, normative competence, strategic competence, and interpersonal competence. The study derived an integrated and problem-solving framework for sustainability that organizes key competencies.

All educational institutions must take their responsibility to deal sustainability related issues and challenges, specifically universities should focus on the development of sustainability related key competencies among individuals i.e., graduates who are going to encounter real problems in future (Rieckmann, 2012). Univeristies are of central position to play an important role for shaping the future through education and research creating new knowledge and developing key competencies and raising sustainability awareness**.** Wiek et al (2011) studied key competencies that are considered crucial for university graduating students to have. They provided an explicit and shared framework for developing specific profiles of the academic field. Moreover, key competencies provide the reference scheme for transparently evaluating student learning and teaching effectiveness. Sustainability education should enable students to analyze and solve sustainability problems, to anticipate and prepare for future sustainability. Sustainability issues are different from other kind of problems, and they require a particular set of interlinked and interdependent key competencies to address them effectively (Wiek et al., 2011).

ESD and E-learning

Distant courses and e-learning programmes are critical contributors to promote inclusion and accessibility for students who live distant to Higher Education Institutions (HEIs) and those who need flexible study times. E–learning is a feasible way of promoting democritization of education (Berchin et al., 2021) . Azeiteiro et al., (2015) studied the effectiveness of education for sustainable development through e-learning in higher education. They included students from different courses and programs taught at university of Aberta to analyze expectations and experiences of students and they found that the students showed a high level of motivation and satisfaction when they were surveyed on their expectations and experiences about sustainability and environmental science programs. The results showed that the participants achieved an effective learning outcome and the study concluded that properly organized formal e-learning programs can prove to be an effective and alternative way of learning specifically for those who do full time jobs (Azeiteiro et al.,2015). It asserted the idea for further studies to be conducted on pedagogical and learning issues on different sample sizes and research tools to get an in-depth view of the phenomenon.

Chapter 3

Methodology

Research Design

This study is focusing on exploring the students' views on Masters in Education for Sustainable Development from University of Gothenburg, their expectations from the programme and their learning experience, this makes the study qualitative in nature. This research project is affirmative and explorative research, dealing with Education for sustainable development and exploring and investigating a master's program under ESD lens from students' perspective. Case-study approach is used in this research by collecting narratives from students about their learning experience.

Karatzoglou (2013) researched two journals between the years 2003-2011 that publish ESD research articles and found that the prevailing research approaches were theoretical and mostly case-study approach is used to study sustainability and ESD taught in higher education.

Choice of data collection method

As this study is qualitative in nature, interview is used as a tool to achieve a comprehensive information from an insiders' perspective (students). According to Creswell & Creswell (2017) interviews are used for qualitative design that provide a direct interaction between researcher and participants and the researcher enters in the participant's world through interview which provides more in-depth picture. These interviews can be face-to-face, on telephone, or a focus group interviews with six to eight members in a group.

According to Cresswell and Creswell (2017) interviews used in qualitative studies are generally unstructured or constitute few open-ended questions (semi-structured) that are asked to elicit detailed opinion and description of the phenomenon from the respondents or participants. The researchers should develop and use an interview protocol in advance to use it consistently during all interviews. Interview protocol should consist of basic information about the interview, an introduction, and the interview content questions with probes (Creswell & Creswell, 2017). Interview process includes asking questions and recording answers, and taking notes of the event or conversation (Creswell & Creswell 2017).

Thus it seems appropriate to used interview as a method for data collection, as literature indicates that the studies with similar topic have used semi-structured interviews that facilitated the researchers to understand the students' perspective and expectations from ESD courses (Azeiteiro et al., 2015; Cebrián, 2017; Valderrama-Hernández et al., 2019). Semi-structured interviews provide the flexibility to reseracher to probe and ask the participants to elaborate more on some specific points to explore the phenomenon (Gibson & Brown (2009). For this study, an interview protocol was prepared (see appendix 1) that guided the researcher during the interiew sessions. Interviews were conducted with the current and former students of Masters in education for sustainable development. As this programme is an online and most of the students are not physically present in Gothenburg, so they are approached online and all interviews are conducted through Zoom. The language used in the interviews was English, and the interviews were recorded. It took from 50 to 90 minutes for the interviews that varied for each interview depending upon the length of the responses/ answers from the respondents. All the interaction was carried out through emails and zoom.

I tried to make a friendly interaction with the participants even before conducting the interviews through writing them about my project and asking them about their studies and projects and exchange of ideas on Education for sustainable develpment, to build a rapport with them beforehand. It helped me to build a rapport with the respondents before coducting the interviews. The interviews were formally started with introducing myself as a researcher and explaining the purpose of the research. It was also kept in consideration that the participants feel comfortable and not remain anxious or feel stressed about the interview as a process, for example if they (some of them) wanted to stop their video during the interview, I allowed them to do so, but the voice recording was on during the whole interview session. Signed Consent forms were also collected through email but the verbal permission or consent was also taken before starting the recordings. All the interviews are conducted and recorded with audio video Zoom meetings, as face to face interaction provides more sense of relaxation and generates guinuine responses (Creswell & Creswell, 2017). All participants are interviewed about their experience during Masters programmes and their perspective on Education for sustainable development, that was the focus of study.

Sampling

In qualitative research, participants and sites are purposefully selected because it enables the researcher to understand well the problem and research question (Creswell & Creswell, 2017). The participants of this research (Students from Masters in ESD from University of Gothenburg) were purposefully approached and requested to participate in the study by following procedure; firstly, a letter containing the introduction of the reseracher, the topic and the permission to invite the students from that programme for this study as a participant was sent to the course coordinators. Then the coordinators sent the request/ invitation for participation to the students from the program. Eventually I recieved emails from 5 current students who were interested and willing to take part in my research as a participant.

It was difficult to approach alumuni from the programme through emails of programme cordinators and I recieved no email from previous students then I used snowball sampling and approached former students through current students (actually the participants of the study). At the end, I got emails of interest from two former students, who expressed their interst in my study and became willing to participate.

So, there were 7 participants selected for the interview at the end. Among them 5 students were currently engaged in the programme; 2 student were in the first year of the programme, 3 students were about to complete the programme and were writing their own thesis as well, and 2 former students (alumuni) were included in the study to collect varried information and viewpoints about the students' experience during the Masters programme in ESD. The description of the participants is presented in the tables below:

Table 1: Showing gender and status of participants

Participants						
Year 1 Semester(1-2)		**Year 2** Semester(3-4)		**Alumuni** Completed studies		Total
Female	Male	Female	Male	Female	Male	
1	1	1	2	2	-	7

Table 2: Showing background and description of participants

Respondent no.	Background	Profession/s	Connection with Sustainbility education
1	Swedish	School Teacher	Yes
2	European	Curator	Yes
3	Denish	Free Lancer + Writer	Yes
4	African (Swedish citizenship holder)	Ware house worker	Yes
5	European Ancestry (New Zealand)	Travel Guide	Yes
6	Swedish	Folk School Teacher	Yes
7	European Ancestry (Caucasian)	Lawyer + Teacher	Yes

Ethical Consideration

This study is conducted individually for the completion of Masters degree program, there is no other purpose than academic to conduct this study, and I assert that there is no political, financial, or organizational involvement or influence in the study. The ethical guidelines and literature followed to carry out this research, aligns with the Swedish Research Council, provided by the document for ethical guidline for researchers i, e., Vetenskapsrådet (2022).

According to ethical guidelines individuals involved in research should be treated sensitively, and with dignity, inspite of any difference emerging due to age, gender, ethnicity, class, political beliefs etc (Creswell & Creswell, 2008, De Vaus, 2001; Sliverman, 2010). Researchers should be mindful towards the sensitivity of inequalities associated to race, gender. LBGT and related issues and socio-economic status, through out the process of research, that includes data collection, reporting and while publishing it (BERA, 2018; Vetenskapsrådet, 2022)

First step to approach the participants was to send a letter (an email) informing the course administration about my project, along with an introductory note and an invitation to participate. The course coordinator then sent email to the students involved in Masters in Education for Sustainable Development. Participants are included in the study after getting their emails showing their interest and willingness for the participation in the study and the informed consent forms were signed and collected, because it is important to get their informed consents (De Vaus, 2001). They were informed that they have the right to withdraw from the study at any stage of the research. Transparency is assured by sending an introductory note describing the purpose of the research and introduction of myself to the department administrators that has been uploaded on Canvas pages for the students currently studying at the department. They are informed about the purpose of the research appropriately and they willingly approached me to participate in the study.

I tried to build the rapport with the participants before conducting the interviews by communicating with them through emails and tried to make a relationship with them so that they can feel comfortable in the interview session with me. Researcher has a responsibility to maximize the benefits and minimize any risk or harm (BERA, 2018), there were no such risks in my study and I made sure as a researcher that participants experience no (physical, psychological, or financial) harm arising from participation in this research.

Throughout the process of transcription (during data analysis and reporting), I tried to be unbiased by giving the participants their own voice and by ensuring fair and true representation in the interpretation of the results, and not to add or dominate my own judgement. Anonymity is ensured for privacy, as confidentiality and anonymity should be considered carefully by the researcher (BERA guidelines, 2018). Data is stored in my personal computer for temporary use and it will not be saved for long time. To keep the respondents anonymous, I assigned 1-7 numbers to the respondents instead of using their names in this study, and it is made sure that participating in my research will not affect their grades, reputation, or evaluation at the department as they will remain anonymous throughout the study. Online interviews are the advantage in this case as the students of this program are already studying in online environment, so it was easier and convenient for them to have Zoom meetings, as they were familiar using Zoom meetings and it has not cost them anything in terms of travel expense etc.

Analysis and Interpretation

For the analysis of collected data I used the thematic analysis approach. Thematic analysis was selected because the nature of study is qualitative, and the data was collected through interviews. Thematic analysis is a process for encoding the information that is qualitatively collected, it helps the researcher, scholars, and analysts to systematically use various type of collected information to accurately describe and interpret the people, events, and situations (Boyatzis, 1998).

According to (Braun & Clarke, 2019) thematic analysis is a method for identifying, analyzing, and reporting patterns within qualitative data. This method organizes and describes the data set in detail and its peculiar aspect is flexibility. It is not a theoretically bounded or firm approach to analyze qualitative data, instead it is a useful research tool that exhibits a rich and detailed account of data (Braun & Clarke, 2006). It begins when an analyst starts noticing meaningful patterns within the collected data in the process of data collection and it ends at describing all the collected data sets. Thematic analysis is flexible, relatively easy to learn as a method, it provides summarized key features extracted from large data and allows thick description of collected data (Braun & Clarke, 2006). It can highlight similarities and differences across data set and it also generates unanticipated insights and it can prove to be useful in producing an analysis that is suited to informing policy development (Braun & Clarke, 2019).

Few important terms presented by Braun and Clarke (2006) that are used in the process of thematic analysis include *data corpus* that means all the collected data for the research study, *data set* that is all the data that would be used for analysis, it can also be a combination of data under study. Other terms are *data item* that refers to each individual piece of data. A *code* that is a small phrase or a word that is labeled or named by the researcher to the chunks of data (Liamputtong, 2009). Then *data extract* that refers to the coded chunk of data extracted from a data item, for example a theme. A *theme* is an important feature from the research question, it exhibits a patterned or a meaningful response from the data set (Braun & Clarke, 2019).

In this study *data corpus* is the data that is collected through interviews as well as the information taken from coordinators of the Masters programme understudy. *Data set* were the transcription of all interviews, and *data item* refers to each individual interview that is analyzed and then *codes* are given to the smaller chunks of information from the data. Lastly, *codes* are then analyzed according to the *themes* extracts from the research questions RQs to look the coherence of the RQs and the data collected.

While analyzing the collected interview data, I employed deductive themathic analysis approach that is systematically described by Braun and Clarke (2006). Following 6-phases guide is used for doing this thematic analysis;

Phase 1: Familiarising with data: As I have collected the data by myself through interactive means i.e,. through interview, so I had some prior knowledge about the data which I was going to analyse. At this stage, I listened to the whole recordings sessions one by one, to get the idea of actual expressions and tones of statements provided by the respondents and I transcribed the required responses from audio-video recordings by hand on my computer. Then I read and re-read the transcriptions and it enabled me to be aware of the depth and breadth of the content that is required for the analyst according to Braun and Clarke (2006). During this process, I highlighted the key elements from the data, so I had a prior familiarization and understanding of the collected data before at the first step of analysis.

Phase 2: Generating initial codes:

At this phase initial list of ideas is generated, that involves the production of initial codes from the data and data starts to organize in meaningful groups (Braun & Clarke, 2019). Coding is a process when researcher starts defining what is the data about (Charmaz, 2006). Coding at this stage depends on the

approach you are using to look at the data, whether it is 'data-driven or theory-driven'. During this stage I labeled small chunks of data as codes, for example the initial codes from my study were as follow; , I expected, learning, understanding, education, movement, ESD, UNESCO, critical, skill, pedagoical intervention, comptencies, sustainability, virtual experience, in my opinion.

I did it manually, highlighting the codes emitting from each data item.

Phase 3: Searching for themes: This phase involves a broader analysis of themes instead of codes, as it begins with initial coded and collated data, it re-focuses at looking into potential themes, gathering all data from different codes to overlapping or similar themes. This can be done through using tables, mind maps, and through writing name of each code (Braun & Clarke, 2006). At this stage I have looked at coded data and piled up all the codes under the collection of candidate themes, sub-themes and relationship between codes, between themes. In doing so, the aforementioned themes served as a unit of analysis towards capturing the students overall experience and perspective in the masters programme. Using deductive approach following themes have been set to look at the data set;

'Background and professions, reasons to join the programme, expectation from the programme, understanding of ESD, sustainability consciousness, ESD competencies and skills developement, digital experience, classroom environment'.

Phase 4: Reviewing themes: At this phase, data is analyzed on two levels of reviewing and refining the themes. At level one I read all collated extracts for each theme and checked the coherent patterns of themes, to make a thematic map to proceed further. Level two is a similar process but here we look at the validity of individual themes and candidate thematic map so that we can check for the accurate representation of data set. This phase involves reading the data set for one more time to make sure that the themes are well representing the entire data and to add any relevant themes that have been missed before. As my themes were related to my research questions and pre-defined from the literature so I have set the coded data in the themes and looked for any emerging potential theme to add in my theoretical approach.

Phase 5: Defining and names themes: This phase is about defining and re-defining the themes, conducting an analysis on the themes, and organizing the internally consistent extracts, for a clear narrative. At this stage I have looked for any sub-themes emerging as they usually emerge from complex themes.

Phase 6: Producing the reports: At this phase, there was a fully worked out themes set ready for a final analysis and writing up a report, that is a concise, coherent and logical narrative of the collected data.

ESD Statement:

This thesis is motivated by 17 SDGs that were formally introduced and adopted by all 193 members of the UN in September 2015, when these goals were set for a more sustainable world. The aim was to end poverty, promote prosperity and protect the planet for current and future generations of all lives on this planet Earth (UN, 2015).

Goal 4; 'Ensuring Quality education' puts the responsibility on educational institutions to ensure quality education and positioning education at the heart for the achievement of sustainable development. So as a students and as an educational researcher I decided to carry my research thesis exploring Masters in Education for sustainable development taught at University of Gothenburg.

The very focus of this thesis is Education for Sustainable Development, ESD. The entire thesis engages with an exploration of students experience and perspective on Masters is ESD in an exclusively online environment. This masters programme is run at a sister department within our faculty. The findings have the potential to inform how ESD programmes may or may not help students developeing their Sustainability consciousness and how digital programmes could best respond to students' need and expectation in the light of Education for sustainable development. Particularly, my study offers an insight in such a time wherein digital learning is expanding massive open online course. In most cases, students' perspectives are taken for granted and are not examined in digital programmes. Yet, in order to ensure the sustainability of online programmes, it is worth examining the students' perspective and my thesis is such an endeavor. Using the lens of ESD, we can problematize education itself and raise questions on programmes promoting ESD.

Introducing the Masters Programme under study

The very focus of this study is the Masters in Education for sustainable development that is specifically designed to focus on sustainable development to enable the students to deal with sustainability challenges. 'Masters in Education for sustainable development' It is a completely online taught program that is collaborated by four different departments from the University of Gothenburg and one from Chalmers University of technology. It is mainly run by Department of Pedagogical, curricular and professional Studies, and its participating departements are;

- Department of Biological and Environmental Sciences
- Department of Education and Special Education
- School of Global Studies
- The department of Technology Management and Economics, Chalmers University of Technology

This programme was started in August 2018 for the first time and being labelled as sustainability-focused programme. It is a particularly online Masters programme comprised of 120 Credits. It is a pioneering program that encourages to enroll diverse ranges of students from around the globe engaging at the same time. This Masters program could be a sustainable platform for students from different disciplines, national and cultural backgrounds joining together in an online setting. All teaching and learning is done in English language. There are about 22 teachers involved in the teaching process of programme. Induction rate of students for the programme since it has been started in 2018 is as follows;

In Autumn 2018 there were 60 registered students on the first course, in autumn 2019 there were 58 registered students, in autumn 2020, 65 students had registered for the first course, while in 2021 autumn 71 students have registered for the first course. Accumulatively, 254 students got admission in this Masters programme, while there is a very few number of students who completed their thesis. We have only had two cohorts that have finished all the courses and in 2020 we had 10 students that completed the master thesis and in 2021 we had only 7 students (this is because of the pandemic) (Course Administrator).

Students were recommended to use Canvas that contain all information about lectures, reading material, assignments and submission deadlines. They were requested to use the virtual platform for written form of conversation to communicate with peers and teachers in discussion forum. There were involved video tutorials, pre-recorded presentations and ZOOM meeting for different courses.

The masters programme is a two years study and involves four semesters/terms. One of the peculiar and special features of my study is the selection of sample, as there is a combination of former students, students in their first year or 2nd semester/term, as well as students in their second year or 4th and last semester. It has allowed the study to get diverse experience from different years and insight to the teaching-learning process going on within this Masters programme. To keep the participants anonymous I have given numbers 1-7 to the respondents and in following text I would be referring to the research participants by respondent 1, respondent 2 and so on.

In the light of the emphasis on HEIs for incoporating ESD and considering students as the central element in teaching-learning process in building knowledge (Draghici, 2019), it would be interesting and worth investigating into Masters in Education for sustainable Development taught at Gothenburg University, Sweden that is a unique masters programme that is developed to provide an opportunity to students to develop their knowledge and skills and to systemtically and scientifically study ESD. It aims to develop the students' ability to critically reflect upon sustainable development so that they can design and evaluate educational initiatives towards sustainable development. This is a particularly online program that has been designed to strenghten students' skills and abilities within educational context.

Inclusion criteria

One of the particular features of the Masters programme in Education for sustainable Development is the flexibility in inclusion and admission criteria. Students from various fields have joined the programme for the same purpose, i.e, get substantive knowledge within the field of education in relation to the timely perspective of sustainable development. Students in the programme are engaged in different kind of jobs in different parts of the world-including those who work as teachers and need to get the knowledge and experience on how to incorporate sustainability into their teaching practice. All contributing students are either European or have the citizenship of Sweden or have any European ancestry i.e, father or mother from Europe. People from different fields have joined this programme at different stage in their life that gives the evidence of life-long learning which is one of the characteristics of ESD as provided by UNESCO (2005). Six respondents were white European, while one participant had an African background having Swedish citizenship, but somehow all of them are from Sweden, have lived in Sweden or somehow related to Sweden.

Chapter 4

Findings

In this chapter I present the findings that are gathered through semi-structure interviews with the participants. The aim was to explore Students' experience and perspective about an online Masters programme in ESD taught at Gothenburg University. It includes exploring students' expectation from the program, their learning experiences in an online environment and their perspective about Education for sustainable development and the effectiveness of the program in developing sustainability consciousness and competencies required for ESD.

Table 4: Summarized findings

ESD in Higher Education (Students' perspectives)		
SUMMARIZED FINDINGS		
Response Catagory	**Findings**	**Related Res. Questions**
Reasons to join this Masters proramme	**-Personal curiosity and interest in knowledge of SD** **-To get a PhD position in future** **-To be able to contribute to the world and sustainability problems** **-To grow professionally with sustainability education** **-To incorporate sustainabilty and SD knowldge in professional practice (i,e., teaching, art etc)**	What were the expectations of students pursuing Masters in Education for Sustainable development before joining the program?
Expectations from the programme	**-To get an understanding of education and sustainable development** **-A basic orientation of sustainability** **-Substantive knowledge of SD and teaching -learning methodologies** **-Learning how to transfer knowldge on SD** **-how to educate for sustainable development**	
Learning experience **+** **Online Environment**	**-A comprehensive understanding Education for sustainable development** **-feasible online study opportunity** **-Canvas as a helping tool** **-Provided literature being helpful** **-Isolated learning** **-written communication** **Challenges: less interactive teaching sessions, missing cultural aspects, written expression, hard to organize.**	How was their learning experience during this online program and what challenges they face?

Development of SC and crucial competencies	Sustainability consciousness has sharpened that modified the behaviour Led to sustainability sensitive decisions	Development of critical thinking competency, system thinking competency,	How do they see the outcomes or impact of this program in developing their sustainability consciousness and competencies that are crucial for ESD?

Reasons to join

To address research question number 1 participants were requested to talk about their expectations from this Masters programme and reasons behind taking admission in this Masters programme. Firstly they started with the reasons to join this programme and why they decided to take admission in the Masters in ESD. So, firstly I present the reasons to join this programme:

The reasons to choose this programme varied from person to person. All seven of the respondents have already heard a lot about sustainable development and three respondents felt that they need proper education and training within the field of Sustainable Development. A degree within Education was somehow an objective to join this Masters programme. Three respondents were intended to gain theoretical knowledge of sustainable development and excel in practice. So for all of them the programme title was a perfect match for what they wanted to do. Being online teaching was a merit to their choice of the programme because they could attend a Masters Degree from any where around the globe.

Most of the participants choose this programme due to a very personal curiosity and interest to acquire knowledge about sustainability and sustainable development for example;

> I really chose this masters mostly because it had a lot about education in general has always been interest and it had a lot to do seemingly with ethical ideas about how we live in the world and ethics are main concept for me. So those two things how we teach to learn about ethics in a practical manner seemed appealing. (Respondent 3, Personal communication, 11 March, 2022)

> We talk about it a lot in folk high school. Folk high schools have a lot to do with sustainability and those issues, and it's a something that you read about every day. And I've had a growing concern about the way we humans act and treat the world and see ourselves well. (Respondent 1, Personal Communication, 4 March, 2022)

Respondent 1 asserted that she want to contribute to the betterment of society by saying;

> I want to contribute into making the world a bit better for all inhabitants and then Education is my field so that sort of education just came together this promise. (Respondent 1, Personal Communication, 4 March, 2022)

> The main reason why I was interested in the program was because it connects sustainable development to education. I used to be a teacher in academia, but I never had any formal training in education. So I started thinking about how do people learn sustainable

development and in my teaching there was a big part of sustainable development and I wanted to know how to teach that. (Respondent 7, Personal Communication, 22 March, 2022)

Some of them joined this Masters programme in order to pursue a PHD degree in future along with having other reasons for example;

There were many particular reasons, one reason is that I want to go on with it in academia, I want to go on to a PhD position". (Respondent 1, Personal Communication, 4 March, 2022)

I am looking forward to work with something like sustainability in future or doing some postgraduate studies like PhD. (Respondent 4, Personal Communication, 12 March, 2022)

The results show that most of the student are involved in lifelong learning for one or the other reason and respondents are intrinsically motivated to pursue this Masters programme.

I applied to this program realizing that there are certain aspects of arts practice that are not rooted enough in action in arts. Although institutions and curators and artists have been engaging with the ecological crisis for some time now. I thought like personally, I was not seeing enough results on the ground. (Respondent 2, Personal communication. 7 March, 2022)

Because there's a lot of education involved to what I was doing. I have a background in education, so I really liked to and I'm still really interested in working in education so I applied for the course (Respondent 5, Personal communication. 13 March 2022)

I am passionate in first place by Sustainable development. I am driving by the need to know. I'm curious to know, to learn about sustainability and then to use the knowledge that I acquire to try to contribute to sustainability issues internationally or locally. (Respondent 4, Personal Communication, 12 March, 2022)

In nutshell, respondents join this Masters programme with the expectation to get substantive knowldge of sustainability, sustainable development, and the role of education with respect to SD. Some respondent wanted to accomplish their personl curiosity and interest in education *and* sustainable development. Some of them took part in this degree to get to their PhD degree in future. Some wanted to incorporate knowledge of SD and sustainability issues in their on-going profession for example teaching practice and art.

Expectations from the programme

Here I present the responses from the students as they compared their expectations to what they experienced in terms of learning during the programme. There were several expectations from Masters in ESD expressed by the students. Some respondents expected the programme to be helpful in learning how to communicate the complex ideas of sustainability in a constructive way, and they expected that it will enable the students to act according to climate crises. One of the former students from the program, who wanted to get combination of substantive knowledge about ESD and teaching and learning methodologies commented:

I needed the tools and the toolbox on how to transfer SD knowledge to other people and how to disseminate this knowledge more effectively than I have done in the past. (Respondent 7, Personal Communication, 22 March, 2022)

Later she informed about her learning experience during pursuing the programme. She expressed her contentment with the programme for being successful in delivering what she expected from it through this comment:

> I expected the combination of substantive knowledge about sustainable development and in combination with the teaching and learning methodologies.... and that's exactly what happened because we were taught the how to, so I was given the tools and the mechanisms to teach sustainable development (Respondent 7, Personal Communication, 22 March, 2022)

For some respondents the expectation from this programme was to be helpful to grow professionally, for instance:

> I expected of course, a basic orientation about sustainability because I had read the course description and everything. I also expected it to be challenging because it is an advanced level program. So challenging in an academic sense, like intellectually maybe. (Respondent 1, Personal Communication, 4 March, 2022).

Others shared:
> I guess my expectations before reading the course syllabus was to learn how to communicate complex ideas in a constructive way. I am not really reducing the climate crisis into a narrative of doom and gloom. But really, learning how to empower myself and others to act. (Respondent 2, Personal communication. 7 March, 2022)

> I was definitely curious about the educational perspective of it. Like that there would be more understanding of education and sustainable development and how to educate for sustainable development. It was an expectation, I would say skipping ahead of questions or points, I suppose that didn't turn out exactly that way. (Respondent 3, Personal communication, 11 March, 2022)

Two of them have joined without much expectation from the programme but they intended to get a Masters degree in Education and in Sweden graduate programs are fee free for EU students so for some, it was the best opportunity in terms of finances to progress in educational career:

> I didn't really have much expectations. I mean, I didn't really know what the subject was. I saw it as a gift. (Respondent 5, Peronal communication, 13 March, 2022)

> I think I was not really sure about what that meant, or how that would work, before I started the program. (Respondent 6, Personal communication, 16 March, 2022)

So, students expected this programme to be helpful in delivering substantive knowledge and in-depth understanding of sustainable development and the educational perspective of it. Some of them expected to know about the learning methodologies and teaching strategies so that they become able to deliver SD more effectively.

Learning Experience

Understanding Education for Sustainable Development

To explore students' learning experience, inquiry of their understanding of Education for sustainable developement ESD was crucial. The responses for this interview section were quite interesting and diverse. For some respondents understanding of ESD was limited to their own field of knowledge and

profession and for others it was very vast. Each respondent has provided a unique definition of ESD, that clearly shows the quality of the knowledge they have gained from different courses of the programme. Education for sustainable development was referred as a 'buzz word', 'an umbrella term', 'complex concept', 'urgent type of study' etc. So it was mostly the profession of the participants and their personal interest and background where the understanding of ESD lies around. So, students' understanding of the term ESD is provided below by their own definitions and understanding:

For respondent 1 and respondent 3 ESD was more of a political agenda presented by UN for educational insitutions to follow, as they asserted;

> So now I have an understanding of ESD as not very unproblematic because just coming from the UN, which is a white Western male dominated body in a sense makes it interesting to problematise from the beginning. It's more like really complex and you really have to live with that complexity now. (Respondent 1, Personal Communication, 4 March, 2022)

> Education for sustainable development is definitely a political idea. ESD is completely 100% political. It is a political movement from UNESCO. (Respondent 3, Personal communication, 11 March, 2022)

> It's a political movement with political ideas, political agenda for certain values and ethics which are constantly changing and moving over the years and there are a lot of different opinions about how to understand ESD, So I mean, for me I can only see it as a process not as a definition. (Respondent 3, Personal communication, 11 March, 2022)

The data shows that the programme provided a multi-perspective point of view on ESD. It is evident that it has developed critical thinking in students by giving the exposure to all kind of the presented theories and literature on ESD. Following comment is an example:

> I have a lot very much more diverse view on education for sustainable development. So that is something that the program has really succeeded in bringing forth like the different perspectives on ESD and really questioning and problematized thing whether education should even be **for** something or what is the purpose of education in itself? (Respondent 1, Personal Communication, 4 March, 2022)

Respondent 7 has looked at it from geographyical specific perspective and responded:

> So education for sustainable development for me is teaching and learning of experiences and perceptions and knowledge of sustainability in development context to the participants who are affected by sustainability issues. (Respondent 7, Personal Communication, 22 March, 2022)

Another respondent highlighted the relation of ESD to environmental science by saying:

> It's the understanding of our connection in relation to the environment and how aspects of human rights and ecology is connected to this relationship and the understanding of that and we have a possibility to see what is best for that connection to sustain it. (Respondent 6, Personal Communication, 16 March, 2022)

Respondent 4 connected sustainable development to education by asserting:

> My understanding of education for sustainable development is that the sustainable development goals are anchored in education, so education is very crucial in attaining those

goals. The whole world need to be educated further if we will educate people not only about sustainability, but in order to get out of poverty, they need to get to be educated, they need to be educated about skills, business skills, and also about how to behave towards the environment. For example, a basic example is education on CO_2 emission. (Respondent 4, Personal Communication, 12 March, 2022)

It's quite a broad understanding from the basis of looking at a lot of challenges taken because of education for sustainability. It's a very urgent type of study that not many people know about. It deals with a lot of really radically new topics like the Anthropocene and it deals with climate change. It deals with planetary boundaries that deals with things like doughnut economics and degrowth. (Respondent 5, Personal communication, 13 March, 2022)

Education for sustainable development is the result of an existing practice, confronted with urgency, so it's the result of a certain mechanism, Global mechanisms that understood that we are in an urgent situation and we need to Rethink how we operate in the most general sense. (Respondent 2, Personal communication, 7 March, 2022)

All these definitions or explanation display a broad understanding of the concept of the term Education for sustainable development. Each participant have looked at it through different lens that they have taken from their academic, professional, and also geographical background. The understanding of ESD is varied from country to country and institution to institution, depending upon the need and political influence. To mention, there is a remarkable consideration of ESD in Swedish educational institutions such as schools, folk high schools and universities, and some respondents got intersted in ESD by the short courses they have taken from some universities or from the teachers training programmes that are run in the schools. Somehow, Education and Sustainable Development or sustainability is so much closely observed issues and it made the education itself a problemitized concept.

Table 5: Understanding ESD

Understanding of ESD (from students' perspective)		
Domain	**Findings**	**Reserach question**
ESD as a political agenda	ESD is a political movement driven by (white male dominated institution) UNESCO, it is complex, multifaceted in nature. It is on going process instead of a concrete defined term.	This is an important component of the responses to the research question 2 in terms of students' learning experiences. Among those experiences the understanding of ESD is an important part. There is nothing right or wrong about ESD, but all provided definitions are again
ESD as environmental science	ESD is the human connection to the environment. It is the non anthropocene view and understanding that human are co-responsible and not solely responsible for sustainable future of this world.	
ESD is an urgent call	ESD is a global mechanism that promotes urgency to rethink the ways we are opperating existing systems.	
Sustainable development and Education	Sustainable development is deeply routed in education and we have to promote education to address various sustainbility related issues.	

Problemtizing ESD	ESD is promoting skepticism and it problemitzes the education it self and raises question like, whether education should be *for* something or not?	left open for further discussion.
Geographical perspective	ESD is the teaching and learning the experiences and perception of sustainability for the people living in areas that are affected by sustainability issues.	

Digital experience (Learning online)

All respondents admitted that being digital is the biggest characteristic of the programme and everyone said that if it would be on campus, they would not be able to take part in it. In their digital experience of learning CANVAS has a vital role to play. Canvas is a web-based tool used to manage learning systems digitally. Educational institutions, teachers, students use it to access online course content, available reading materials and they communicate and manage their submissions, discussions, announcements etc through this tool. Canvas organizes whole online taught course with many options. Two respondents have called Canvas an important tool in the teaching learning process, among them one respondent called it be very helpful:

> I really liked and enjoyed canvas. It made it so easy. With canvas I didn't even need a diary, I didn't even need a physical student diary. It was all on canvas for me. It was so nice to just have focus like, get your reading list and you go straight to those reading things because you can find them as it's really streamlined and it's amazing to have a dashboard like that. (Respondent 5, personal communication, 13 March 2022)

For other participant it was different experience for example;

> It was hard, sometimes you spend more time figuring out what to do, where to do it, and how to do it than just doing it. (Respondent 3, Personal communication, 11 March, 2022)

The research results show the overall contentment with the program and towards the learning process and their growth in terms of critical view but at the same time they wanted to have the missing part of it. They have enjoyed the privilege and flexibility of the courses and lectures for being online and doing them on their own depending upon their own schedule and at the same time they are missing the physical part of it. Respondent 1 shared this ;

> Now I've been sitting in discussions with a Dutch teacher in Malaysia, I've been sitting with an American poet, I've had a natural scientists from Ireland, we've had a citizen of Auroville, one of the more famous Eco villages in the world in India, I had primary school teachers from Greece. So, so it's like the diversity is just a huge advantage from the online setup. At the same time you missed the informal fika* chats, and that's a huge part of the learning experience and the becoming of studies. (Respondent 1, Personal Communication, 4 March, 2022)

Studying at this programme has given a clear futrue orientation to the students. All respondents are already professionally engaged somewhere, and they are happy continueing their profession execpt one respondent who want to join the field of education again as he is convinced that he is good at academics and want to contribute to the world of research towards the sustainable future. This degree is not something on which the career of the students depends totally, so it has devloped some research interests among students and gave clear orientation towards how to contribute to a sustainable world

I think personally that online is like a veil and it can cut out.... it cuts out the colourfulness of people. It doesn't shine through because you're using the same medium and you're communicating in a written form, from even the conversations I think we're so focused on the subject matter that we didn't talk about other things of life. There is less room for that in an online environment, so I think that was missing. (Respondent 7, Personal communication, 22 March, 2022)

It is challenging to study online, challenging to study separated from others. (Respondent 5, Personal communication, 13 March 2022)

Data has revealed that students had not enough or face to face interaction with their peers as well as there was less number of online lectures with question and answer sessions. So they feel less conected with their fellows and with the teachers as well. Most of the interaction was in written form, on a discussion forum, where one topic was introduced for the discussion and students were requested and encouraged to comment and share their opinion. Most of the learning took place through uploaded pre-recorded lectures and the related literature was provided in the recommended reading list.

One respondent thought that posting on a forum was a more defined and just way of submission and everyone could see who had posted something and who had not. Respondent are happy with written form of communication but s say 'I can communicate it better verbally as compared to written form'

Classroom Environment

There was not enough evidence of direct communication or discussion between students and less direct interactive teaching sessions. Some respondents have suggested that increasing more direct question answer and interactive sessions can be helpful for students. They said that they will feel more connected to the group. One respondent demonstrated the classroom environment as:

We did not get a chance to talk...there is no talking .... and it's very cold and quite sterile. It can be very isolating... we need positive things to sustain happiness (Respondent 5, Personal communication, 13 March 2022).

For another respondent:
It's basically just Swedish English speaking people from Europe. (Respondent 3, Personal Communication, 11 March, 2022)

Another respondent mentioned:

I need to know who I am studying with, I need to build relationship with my fellow students so that we can support each other and learn together.. but as I can not see them, I dont know how many people are there. I had to make extra effort to reach out to fellow students to try and form relationship. (Respondent 5, Personal communication, 13 March 2022)

If you're speaking about cultures and experiencing other people and experiencing their culture, that aspect was missing. I think that it was not so colorful.... so this aspect was completely cut out. It was missing from this course altogether. (Respondent 7, Personal communication, 22 March, 2022)

Although, respondents from previous years and some from current students also told that they had created a group on facebook to keep in touch with other fellows and to interact more frequently. They

also created whats app group and they were still in touch with each other even after finishing their degree. It helped them to experience a rich learning experience because of the cultural as well as professional diversity. One repondent shared her experience through this comment:

> I've been sitting in discussions with a Dutch teacher in Malaysia, I've been sitting with an American poet, I've had a natural scientists from Ireland, we've had a citizen of Auroville, one of the more famous Eco villages in the world in India, I had primary school teachers from Greece. So, so it's like the diversity is just a huge advantage from the online setup. (Respondent 1, Personal Communication, 4 March, 2022)

Challenges faced during this degree

I have asked the respondents to talk about what is being compromised in this Masters programme and what challenges you had experienced during this time. They came up with different comments that are as follow;

> The ability to build relationships more than mind relationships, spiritual relationships, physical relationships, family relationships where we can't share food together. That was a really big one for me. (Respondent 5, Personal communication, 13 March,2022)

> Speaking about cultures and experiencing other people and experiencing their culture, that aspect was missing. (Respondent 4, Personal communication, 12 March, 2022)

> It is challenging to study online, challenging to study separated from others. (Respondent 5, Personal communication, 13 March 2022)

> I think what has been compromised was the the feeling of asccomplishment and the shared accomplishment towards the end. There was no ceremony, no nothing, no get together. It is my first degree that is not paper based, so I was like surprised to see that I'm getting an email from course coodinator which says, hi there, here's your degree, and it has an electronic signature. We have no harmony and no feeling of shared accomplishment. (Respondent 7, Personal Communication, 22 March 2022)

A very important part of the feeback coming from students' side is the response for the question of changing something in the programme, what is being compromised? almost everyone said that 'to have an on-campus experience has beeen compromised' but at the same time they acknowledged that it was good to be online otherwise we could not have been able to join the programme.

> I think the cultural aspect that has been compromised. I think the ability to, for example, in my in my position when I was writing up my thesis and I had difficulties getting feedback, and having a shorter loops, I think what was compromised was just the ability to go there, knock the door and say hi, I'm still here. Have you had the chance to take a look at my work? so I didn't have that ability and I think we all know how it's easier to ignore a person through an email than a person, so that has been compromised. (Respondent 7, Personal communication, 22 March, 2022)

Frequent direct question/ answers or interactive sessions and more smaller breakout rooms discussions was a demand of students so that they can attend more interactive teaching-learning classroom events.

But I definitely feel it fails as a pedagogical intervention. Basically it doesn't educate for sustainability, doesn't even educate about it. It just gives you texts that you read and then talk about it. That's very rough version of that. (Respondent 3, Personal communication, 11 March 2022)

Some respondents commented that there is a lack of coherence between the courses, specially in the first term. There are clashing courses taught, that create confusion among the students in terms of understanding the concepts. Respondent 1 commented:

There was a lot of inconsistency in how courses were presented. So the structure of the courses were often different. (Respondent 1, Personal coomunication, 4 March 2022)

Most of the coversation and interaction is written based, and one respondent talked about it as;

So when I'm talking to you, I can explain something much better than if I wrote it down' this online learning environment suits somebody who is good at writing. (Respondent 5, Personal communication, 13 March 2022)

Students joining from different time zones consider it more convinient to listen to the lectures and reading the literature according to their own flexibility and ease. Some asked for more flexibility in the use of language as people have different writing styles and keeping them in a bound is something that limits the variety of expression and richness of opinion based data. Two respondents have suggested to have more breakout room discussions with smaller groups, for better learning experience.

Impact of Masters Programme

Sustainability Consciousness and skill development

Most of the respondents referred to their sustainability consciousness to be already gained before joining the programme, but they also mentioned some aspects that they were not aware of before hand. Some respondents have also provided the examples of behaving differently after attending courses during the programme as they found a big gap between the knowledge and behavior. They were very convinced of the fact that the knowledge about the climate change and other ecological issues alone is not enough until we act according to it and being conscious of our carbon footprints, and start behaving accordingly. This programme had helped the students to be thoughtful of the consumption and production of goods and it proved to be helpful in changing their behaviour towards the environment and sustainable future of world.

Evidence of changed or varies sustainability consciousness can be observed through following comments:

The context of the consciousness has changed the way I view sustainability. My sustainbility conciousness has changed and developed. (Respondent 1, Personal communication, 4 March, 2022)

In the second course ESD 200, that was more of a natural science course we learn about concepts like the carbon cycle and the energy, how energy flows in and out of the world, these things I really didn't know before. So, that's a whole new understanding. (Respondent 1, Personal communication, 4 March, 2022)

I think my confidence have changed when it comes to talking about sustainability and sort of critically investigating or questioning when people say that this is sustainable, life cycle analysis and the broader thinking of sustainability, not just that it's sustainability to have an electric car, in comparison to a fossil driven car, but who's making the electric car and where is the components coming from and in who of natures or the world inhabitants have suffered in order for me to be able to keep driving? So my competencies are broader now I think. (Respondent 1, Personal communication, 4 March 2022)

I think that one skill that is the realization or the ability to see the world from a non anthropocentric view. What that means to tune into other actors as well. That is a huge change in my life. That's like a game changer that has enabled me to think that I am not solely responsible, but I'm neither not responsible at all, we're just co-responsible for whatever happens and I need to be aware of the sort of networks or assemblages that I enter and what the possible outcomes of those mess will be?? so that's the process that I've been in for the last months (Respondent 1, Personal communication, 4 March, 2022)

These comments also assert the evidence of achievement of competencies that are crucial for sustainability education.

Almost all participants talk about carbon foot prints and how this concept has changed their behavior towards the environment, when I asked for practical examples, I have got some interesting responses;

I have learned a lot about how to manage my carbon footprints.... But I think now I'm quite conscious when I drive my car, that is a big diesel engine car, I always think about the Carbon Dioxide emission. My driving style has improved. I don't go to town frequently, you know when you drive in town your car emits more, in the country roads, it emits more CO_2. (Respondent 4, Personal communication, 12 March 2022)

I had been starting to live more strictly on a plant based vegan diet and those ethical choices starts me a lot.. I started to read more into and understand the whole system effects of the choices that you make especially on consumption and so in that like let's say Global health and also for people and Environment, Planet manager or whatever. (Respondent 3, Personal communication, 11 March, 2022)

I've been, aware of what ways I can contribute to what I buy in terms of clothing. It can contribute to the working condition for somebody in Asia, in China or something. I'm more aware of the fact that the more I buy clothes the more impact it is having somewhere you work off my purchase of clothing so I am aware that I have to manage the closet in that way and give them a longer life in order to reduce my environment and the impact of fashion, footprints fashion consumption. (Respondent 4, personal communication, 12 March 2022)

It is apparent from these comments that students after joining this program and doing this Masters programme have an attitude shift towards environment and consumption.

One participant expressed his thoughts about this Masters programme;

This master was really good at being critical in general...... I realized our ESD program is not ESD UNESCO. It is not the UNESCO agenda of ESD. It is a critique, a response, you can critique in a positive sense it is a constructive engagement with the ESD movement. That's an education for me. (Respondent 3, Personal communication, 11 March, 2022)

Respondent 7 shared that she started teaching her two kids about sustainability after joining this programme, she also held some presentations at their schools which she referred as an action on micro level, but it is a big step towards educating new generation about a sustainable life and how to save planet since their childhood.

Competencies and skill development

The programme has helped to broaden viewpoints of the participants encouraging and improving anticipatory thinking, critical thinking, system thinking. But it comes as an indirect learning, it is not referred as a part of the direct teaching. All of the participants have mentioned that the programme has developed their critical thinking, some even see the programme in itself as a critical response to the overall emphasized Education for sustainable development presented by the UNESCO for 2030. It is evident from the given excerpt;

> I don't know actually, if our program has been designed with the UNESCO ESD in mind, it might have been, but we just don't see it because it is actually reflecting self criticism. it is reflecting contextual learning with the participants and their opinions to what is necessary for them and what values they have to implement and that is part of the ESD. (Respondent 3, Personal communication 11 March, 2022)

Some respondents were not contended about programme for not being able to teach any direct skill, or a clear perspective as they said that;

> It fails in terms of pedagogical intervention, and learning took place indirectly through reading different texts and literature, and they refer the text as guiding source in place of direct lectures etc.

> We studied different perspectives that were contradictive. And I think that the program could have done more with that" (Respondent 1, Personal Comunication, 4 March, 2022).

One respondent literally mentioned that her system thinking competency has developed, as she started to think out of the box, follow the comment:

> I think I am much more able than before to connect the dots. So this kind of systems thinking was really sharpened up not only through readings the materials and the coursework, but also through the discussions with other students. So now I have started thinking in systems instead of silos. (Respondent 1, Personal communication, 4 March 2022)

Participants have mentioned the improved research skills that they learned from the programme. They have learned how to design mini research on sustainability. Management skills, have developed through the programme, through meeting the deadlines and maintaining a balance between studies, job and family life.

One participant have mentioned;

> I've achieved how to design learning environment based on what you want to teach. Identify your learning outcome. And then start designing learning activities to meet those outcomes. (Respondent 4, Personal communication, 12 March 2022)

Masters in ESD has developed critical thinking for all the respondents, they narrated that it showed us how complex, contradictory and context based things are value based on high degree.

The greatest personal accomplishment I think that has helped me to understand the world in a different way and understand my life in a different way. Because it changes when you start seeing things like that when you start acknowledging all the actors in your life instead of just viewing yourself and your fellow humans as active and the rest of the world as passive. But seeing the whole world as live and active and that's an accomplishment, and it makes life a bit more difficult to live. But it makes it richer. (Respondent 1, Personal communication, 4 March, 2022)

I'm starting to see that the critique sometimes is not really justified. It's almost like this hype of critical theory. (Respondent 3, Personal communication, 11 March, 2022)

It is evident that some theories from natural science are used nd emphasized in the programme such as thoeries of planetary boundries,carbon footprints, and the projects on Sustainability change challenge, anthropocene project. These theories and projects have provided a different perspective to the students and they started using this lens for looking at every action of themselves and others as well, and changed their behaviour and attitude towards environment.

Chapter 5

Discussion

In this chapter, I discuss the results presented in chapter four with respect to the frameworks used. Here I situate my findings within the relevant literature that is presented in literature review. In addition, this chapter include the conclusion, limitations and recommendations for further research.

The aim of this study is to explore students' expectations and experience during an online Masters programme in Education for sustainable Development from University of Gothenburg. It investigates their learning experience and inquiring the outcome of the programme in terms of acquiring the competencies that are crucial for ESD. Main findings that are the students' expectations, their understanding of ESD, online learning experience and acquisition of sustainability related competences are presented and discussed below.

Firstly, the expectations of students from the programme are explored, as the students have various reason to join this programme. It is evident that all the participants had some background connection with the terms Sustainability, SD and particularly ESD. Draghici (2019) suggested that students (teachers of future) should understand and acknowledge the simplicity and complexity of sustainability in higher education. In this way this Masters programme in ESD has become successful in delivering the knowledge on sustainability issues as well as sustainable development SD that helped them to get a broad understanding of education for sustainable development ESD. It is noted that participants have extracted own understanding of Education for sustainable development according to their previous professional background. Hellberg & Knutsson (2018) argue that ESD promotes global life-chance divide because it prepares different population for different lifestyles. Furthermore, the students doing this Masters program have better and broaden understanding of education for sustainable development. They are convinced that the program has developed their understanding and now they can understand multiple perspectives on SD and ESD.

Another finding was the participants' overall contentment and satisfaction with the learning experience, with the course content, literature provided, and the teaching- learning processes. Although there were less interactive sessions and learning was mostly done through the suggested reading and written discussions and the learning took place passively. Online delivery is one of the peculiar characteristic of their learning experience. Berchin et al., (2021) has argued that E–learning

(online) is a feasible way of promoting democritization of education. It was a benefit for all of them for being convenient to join from different parts of the world without being physically present in Gothenburg and without leaving their places of jobs as they all are already working somewhere. This coincides with Azeiteiro et al., (2015) as they concluded that formal e-learning programs at university level can be effective source of studies for being flexible, collaborative, and interactive and cost-effective learning opportunity. Although being online gave a feeling of isolation and coldness to some students because of the lack of interconnectedness among peers and teachers. But for some students who created whats app and facebook groups took it a chance for being engaged with different peers from other countries and destinations. It helped them in broading their understanding and exposure to the global sustainability isuues. Van Dam-Mieras et al. (2007) argue that sustainability problems should be handled by interdisciplinary and multiculturally composed group. There is a huge diversity found in participants of ESD Masters programme, in terms of the educational, geographical as well as professional background. It promotes heterogeneity and it is referred as a crucial aspect in approaching sustainability issues.

Another important finding is the development of sustainability consciousness and the acquisition of competencies that are called crucial for ESD in literature. Hernandez et al, (2019) argued the importance of sustainability conciousness among university students. Development of sustainability conciousness is observed through changed the attitude and behaviour of the students and for being cautious of one's own actions. They all admitted that the programme has sharpened their consciousness towards the environmental issues and challenges, to mention, carbon foot prints and planetary boundaries are the important concepts that they have learned and practiced as well. Berchin et al. (2021) suggest that engaging students with real-life challenges is crucial, by performing case studies and active learning methodlogies, to prepare the students for market. Thats how the findings of the study are alligned with literature.

Mochizuki and Fadeeva (2010) have presented competence-based learning as what the students would be able to do after completing the studies. Development of critical thinking competency is the most prominent of all other competencies that they achieved. Development of critical thinking is an important element related to sustainability in education (Thomas, 2009). Critically evaluating the programme is very relevant example. They see this educational programme as a positive criticism towards UNESCO's ESD, and they perceive that students in this programme are taught how to be critical and skeptical particularly in politically infused ideas. They percieved it a purpose of the programme as it also polished their problem-solving skill, and critical thinking competency, and system thinking competency that were reffered by Wiek et al (2011) as crucial for graduates to learn from a programme at university. Competence-based learning plays a significant consolidative role as it connects knowledge, skills and attitudes or behaviour towards sustainability (Valderrama-Hernández et al., 2019). It has emancipatory and transformative impact that is visible through the research data gathered in this research. I find it apropriate to present the implications of the general agreed key competencies that are used as framework for this study presented by Draghici, (2019):

✓ System thinking competency is acquired by the students as they started to think and understand the relationship of network of systems from different dimensions. Their ability to recognize different systems working together is improved in students.

✓ Anticipatory competency is also very much developed in students as they started to evaluate the possible consequences of their own actions specifically their choices and habits of eating, buying, and driving etc. They have been taking precautionary measures to save their environment and to reduce bad impact on ecology.

☒ Normative competency is not observed from the data as the respondent have not mentioned any significant achievement in this context.

✓   Strategic competency is evident through their use of projects on individual and collective basis, that contribute to awareness about sustainability issues.

✓   Collaboration competency is acquired, and it is very much evident that they learnt others' needs and understand their perspectives. They collaborated and participated as a group in problem-solving.

✓   Critical thinking competency is achieved and each participant in this study has acquired this competency. They clearly reflected on different ideas of SD and ESD. They are able to critically analyze any contradictory idea and they became able to question standard definitions and explanation of ESD and other theories as well.

✓   Self-awareness competency is also observed through data as the students have gained the ability to reflect on one's role in society. It is evident that they can evaluate and monitor their own actions and can control and cope with their desires. Choosing environmental friendly choices are the examples.

✓   Integrated problem-solving competency is also noticed as the students can integrate above mentioned competencies and they can find solutions to sustainability issues.

Lastly, Masters in Education for sustainable development is organized by five different departments. In this case five different departments are working together to deliver knowledge to enable students to deal with complexity of sustainability issues globally. Summers et al., (2005) argues that interdisciplinarity is the "mutual development of the distinctive areas of expertise which different subjects may have to offer". ESD is interdisciplinary, no discipline owns it but it collaborates between various disciplines (Mochizuki & Fadeeva, 2010). Education for sustainable development requires integration of different perspectives from other desciplines along with didactic implications, to strengthen students' ability to evaluate, design and implement educational reforms to contribute to sustainable development (Annan-Diab & Molinari, 2017). The study evidences that Masters in ESD accomplish these characteristics. Students are contented and convinced that the program has played an important role in delivering substantive knowledge within the field of education for sustainable development.

Conclusion and recommendations

This study has aimed at exploring students' expectations and experience from Master programme in Education for sustainable Development. It explored the learning experience in a digital study module focusing on the development of sustainability consciousness and competences that are regarded crucial for graduates to achieve in higher education institutions. Data is gather through semi-structure interviews that helped me to get a comprehensive viewpoint from students. The analytical foundation was to observe students' voice about the Masters programme and how do they perceive its outcomes in terms of their learning. However, it limits the generalization of the facts explored for being the small sample size, and limitation of time spent to explore the phenomenon. That enhances the need for a similar study at a bigger scale or a case study of the programme will also dig into matter. It would be valuable to study how the programme has been designed and evaluated by the time.

I have argued that higher education has an important role to play in promoting ESD, Masters in Education for sustainable development taught by Gothenburg University is a similar effort by Higher Education Institutions HEIs. Students from Masters programme have been interviewed to get the insight to their experience and understanding of the programme as well as about Education for

sustainable development. The participants are contented about the programme in general view as per their expectations from the programme. They have developed a broad and multi-dimensional understanding on ESD. Data reveal the acquisition of sustainability consciousness and evidence of developing some crucial competences from the programme. Among these competences critical thinking competency is on the top of all, and they have also learned system-thinking competency, anticipatory competency, and interdisciplinary competence. Results showed pros and cons of delivering ESD in a digital environment, pointing out political influence on creating a huge chaos for the need for delivering education under sustainable development or sustainability.

The study suggests increasing face to face interacting teaching sessions and there is a need of practical knowledge and experience of ESD implementations. For further studies, it will be interesting to know how the courses and course content has been developed and what is the contribution of teachers in developing the programme, and how teachers are trained to deliver online taught programmes. It is suggested that it should be offered on campus also, so that the people can engage personally, discuss and introduce and invent some sustainable practices by collaborating together. There is a kind of absence of international students in the programme, who bring indigenous knowledge and practical experience with them to the country and university.

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Appendices

Appendix 1: Interview protocol

Interview guideline

Introduction

In the beginning interviewer will give the introduction for herself and the project briefly, this stage will involve in rapport building

Consent

The interviewer will begin by reiterating the consent offered by the interviewee.

Personal information

Can you briefly introduce yourself: your background, profession, educational experience, ethnicity, origin etc

Expectation from the programme
- What makes you interested in this programme? Are there particular reasons to choose this programme?
- What were your expectations from the program before joining it?
- Why you joined education at this stage?
- What is your understanding of Education for Sustainable development?
- How do you see your future? How did ESD program shaped your professional career? ESD implication on your future plans?

ESD and sustainability consciousness
- How did this program develop your sustainability consciousness? Explain with examples.
- What specific competencies did you achieve during this program? How this digital program has developed your skills, that helped you in real world? What are your accomplishments from this programme?
- What do you think about digitalization of ESD?

- How would you explain your digital experience?

Teaching/Learning Experience

- How do you think being virtual affected the teaching learning process? How does it effects the content of the programme and method? What challenges it brought about? How did you managed the deadlines?

- How does being digital programme, it affected your responsibility for learning?

- How does virtual teaching/learning affect the socio-cultural conditions of the online classroom within the group? For instance the harmony? Or the confidence or potential insecurity (if any) that may occur in the group? How do you see socialization between students?

- What do you think has been compromised in such an exclusively online programme?

Ending the interview

Do you want to add something? Is there anything that I have not asked and it is important to mention?

Appendix 2: Consent form

<div align="center">

CONSENT FORM

</div>

I am Usma Saleem from the department of Education and Special Education at the faculty of education at Gothenburg University. I am a second-year student in the International Masters in Educational Research programme. I am doing my master's thesis, on "Students' Perspective and experience of Masters in Education for sustainable development at Gothenburg University". I am interested in exploring students views and experience on the Master programme, Education for sustainable Development, at the department of Pedagogical, Curricular and Professional Studies. I will be doing a semi structure interview with questions aimed at eliciting students' voice and experience regarding the programme. This study has no political or other purposes other than the completion of an educational degree. I will be following a bottom-up and narrative approach towards eliciting students view on ESD and examine it with other aspects including: theoretical/philosophical assumptions within ESD, the program goals and aims and also the broader/global direction and guidelines from UNESCO goals for Sustainable development and plan towards 2030.

Participation is on volunteer basis and completely anonymous. There are no foreseeable risks or harms that can affect participants. The interviews will be online and zoom meetings will be held for interviewing process. Data would be protected under GDPR consideration. You will have the right to withdraw from the study at any stage as participants.

Thank you in advance for your cooperation.

Date /.../

First name ….. / Last name /

Signature /.../