Norwegian University
of Life Sciences

Master's Thesis 2019
30 ECTS
Landsam

Education for Sustainable Development in Norway: Calling for a Whole Institution Approach

Rosalie Gwen Mathie
International Environmental Studies

Education for Sustainable Development in Norway: Calling for a Whole Institution Approach

Rosalie, G, Mathie

Noragric

The Department of International Environment and Development Studies, Noragric, is the international gateway for the Norwegian University of Life Sciences (NMBU). Established in 1986, Noragric's contribution to international development lies in the interface between research, education (Bachelor, Master and PhD programmes) and assignments.

The Noragric Master's theses are the final theses submitted by students in order to fulfil the requirements under the Noragric Master's programmes 'International Environmental Studies', 'International Development Studies' and 'International Relations'.

rosaliemathie@gmail.com

Noragric
Department of International Environment and Development Studies

The Faculty of Landscape and Society
P.O. Box 5003
N-1432 Ås
Norway
Tel.: +47 67 23 00 00
Internet: https://www.nmbu.no/en/faculty/landsam/department/noragric

Declaration

I, Rosalie Gwen Mathie, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature..... Date.....

Abstract

Sustainable Development is appointed as one of three interdisciplinary topics currently guiding Norway's national curricula renewal, thus establishing a need for research concerning Education for Sustainable Development (ESD) in Norway. The Whole Institution Approach (WIA), a holistic integrated approach known for effective implementation of ESD, is adopted as an academic and policy lens, through which ESD-practices at a case study upper-secondary school are explored and benchmarked against. Through this Whole Institution Approach lens an analytical framework collating multiple policy, practitioner and academic perspectives of ESD is obtained; whereby the case study school's current ESD-practices are explored and numerous key barriers and leverage points identified. The findings conclude that while ESD features as a dominant vision within the case study school, the school's capacity for ESD to be taught holistically and integrated throughout the whole school is limited. One of the key leverages identified for implementing ESD-practises more effectively is for school leaders, managers and the national curriculum to take a leading role in ESD to ensure the necessary support and accountability is in place. This thesis argues that Norway possesses the means to be at the forefront of advancing ESD, in terms of leading education reform and transformation, and by increasing their contribution to the international ESD research and policy fields. This thesis calls for the Whole Institution Approach to be considered as a way to support the advancement of future ESD policy, research and practice in Norway, and for ESD to be prioritised as a central tool both within and beyond formal education.

***Keywords*:** Education for Sustainable Development, Whole Institution Approach, Holistic, Interdisciplinary, Norway, Sustainable Development Goals 2030 agenda, ESD, SDG, WIA

Acknowledgements

I haven't taken a conventional route in studying and for that I genuinely thank Norway. There are not many countries in the world that support women to simultaneously work, become a mum, deal with illness, and continue to study. It has taken longer but it has been possible! Cassandra, thank you for being patient over the years, we have had a LOT of discussions, and for that, and many other things, I am grateful. Annelie, thank you for helping form my ideas into words by introducing me to the academic world of ESD in Norway. Astrid, Birgitte and Ingrid, thank you also for supporting me, for giving valuable editing advice and trusting me to be part of your ESD in Practice research. It has been great to discover such a dedicated team of women working with ESD in Norway! Tony Shallcross, your work on the WIA will forever inspire me, thank you for all the advice you gave. Special thanks also goes to my family for the support given and understanding why I am doing this. Also for the endless babysitting, thank you grandparents. Thanks to my dear editor friends Jean Anne, Emily and Stephi, for helping to find that elusive red thread, and to many other friends who have supported me.

I also thank everyone I've interviewed and spoke to as part of this case-study and hope that my findings can help, in some small way, to ensure your inspiring ESD visions are supported. I also hope it brings to light that you are not alone in the challenges experienced when engaging with ESD. I hope for this thesis to capture the interdisciplinary spirit of what ESD seeks to inspire. Multiple collaborations with researchers and departments has brought a richness to my own education and learning experience that I hope will motivate other Faculties to do the same. Noragric, thank you for opening my eyes to the academic world and finding a place for me. It has been a slow but steady journey, one that will forever inspire me to continue to find ways in which to support the transformation of sustainable societies.

Author Note

I chose to study the International Environmental Studies (IES) MSc part-time as a way to deepen my academic understanding of sustainability issues, from both a natural and social science perspective. This was undertaken alongside my current work position supporting a cluster of Norwegian Montessori schools to implement sustainability education, and more recently, to engage with the United Nations 2030 SD agenda. Therefore, utilising this thesis assignment to further understand how education institutions can be supported to engage with ESD became my personal aim. It felt fitting and rewarding to combine both my work and academic interests. As well as working with ESD at the aforementioned schools I have over 13 years of practitioner-based experience utilising numerous pedagogical approaches, including employing arts, photography and forest school methods to deliver sustainability education in Europe. My hope is that my varied background, and experience, can bring a balance of practitioner and academic perspectives to ESD research.

Table of contents

Page

List of Figures

List of Abbreviations

Policy

ESD - Education for Sustainable Development

DESD - Decade of Education for Sustainable Development

MDG - Millennium Development Goals

SD - Sustainable Development

SDGs - Sustainable Development Goals

UN – United Nations

UNESCO - United Nations Education, Scientific and Cultural Organisation

General

CPD - Continued Professional Development

WIA - Whole Institution Approach (also referred to in literature as a Whole School Approach)

SEEPS – Sustainability in European Primary Schools

Norwegian

C-C - County Council (Fylkeskommune)

ESD in Practice – Education for Sustainable Development in Practice (UBU i praksis)

DNS - The Sustainable Backpack (Den Naturlige Skolesekken)

KP - Knowledge promotion (Kunnskapsløftet)

L2 - Lecture 2 (Lektor 2)

NMBU - Norwegian University of Life Science (Norges miljø- og biovitenskapelige universitet

"Voice alone is insufficient, it has to be heard not just listened to

and it has to be powerful"

Tony Shallcross and John Robinson, 2008

Forward

This thesis was undertaken as part of the Noragric International Environmental Studies masters at NMBU. It is also supported by and connected to the research project, *ESD in Practice* (UBU i Praksis), run by Section for Learning and Teacher Education REALTEK. Due to the aligned interests in studying ESD-practices in Norway, a collaboration was made with *ESD in Practice* in 2018, whereby pre-collected data from four affiliated ESD case study upper secondary schools was shared. One of the four *ESD in Practice* schools was then selected as a case study for this thesis where relevant interview transcripts, alongside additional interview data collected by the author of this study, became the primary data source for this thesis. While the *ESD in Practice* 2017 interviews had their own research aims and objectives that differ from this thesis, there was enough common focus and theoretical alignment for the data to be deemed relevant. This relevance was further embedded by ensuring some threads would exist between *ESD in Practice*, and the methodological approaches chosen for this thesis. Information shared via regular meetings and email correspondence with *ESD in Practice* researchers, Astrid Sinnes, Birgitte Bjønness and Ingrid Eikeland, also provided valuable insight into the case study school. This dialogue also provided an awareness of ESD within a Norwegian research context.

In June 2018 a draft version of an *ESD in Practice* article was made available that presented the projects preliminary findings (B. Bjønness, personal communication, June 26, 2018). It is of note, due to the timeline, this article did not directly influence the research design, data collection or analysis phase, as it was accessed after these stages were completed. However the published version of this article (Bjønness & Sinnes, 2019), is utilised to compare the derived themes and findings from this thesis with *ESD in Practice* own findings.

The article has become a valuable reference, both for providing a Norwegian perspective of ESD and as a form of corroborating this study's findings in the discussion. As Bjønness & Sinnes (2019) article confirms, they view ESD through a holistic perspective, therefore multiple parallels concerning both the understanding, literature sources, and knowledge gathered concerning ESD, are naturally found between their article and this thesis.

Chapter One: Introduction

1.1. Thesis research topic and rationale

The global scale of multiple sustainability issues, such as climate change and biodiversity loss, demonstrates that for societies to function sustainably, extensive changes are required spanning numerous disciplines and sectors; on regional, national and global levels (Steffen et al., 2015). The United Nations (UN), founded in 1945, hosts negotiations and dialogue between the member states, formulates global policy to solve global issues, and provides an arena that unites the majority of the world's Nations to promote peace, security, human rights and fundamental freedoms (UN, 2017). The UN's current Sustainable Development Goals (SDGs) 2030 agenda, asserts a global commitment for societies to transform social and economic systems sustainably, with approaches promoted, such as Steffen et al., (2015) ascribe, that integrate the needs of human societies to develop, whilst also maintaining a resilient and sustainable Earth System that upholds safe planetary boundaries (Kapitulčinová, AtKisson, Perdue & Will, 2017). While global policy such as the SDG's exists, it is yet to be seen how each country will interpret and implement the policy in practice. Consequently, numerous research opportunities are evident within this broad field of study, in particular the need to understand if and how the SDGs are being addressed on national, regional and sector specific levels. This thesis explores how the Norwegian Education sector is situated within and can respond to the SDG 2030 agenda.

Today the UN advocate Education, both formal and non-formal, as a key instrument in achieving the SDG 2030 agenda (UNESCO 2017a). Subsequently Education *for* Sustainable Development (ESD) has become a recognised term and remit for all 193-member states to implement on national, regional and local levels and is the starting point for this research. UNESCO (2017a) describe ESD as essential to both quality education and lifelong learning,

that empowers individuals to transform societies in a respectful and just way, for both present and future generations. In Norway, Sustainable Development (SD) is one of three key interdisciplinary topics guiding their 2020 primary and secondary school curricula renewal (UDIR, 2019). Alongside health and life skills, democracy and citizenship, these interdisciplinary topics concern " [...] prevailing societal challenges which demand engagement and effort from individuals and local communities, nationally and globally" (UDIR, 2019, para. 1). This curricula renewal bring the potential to advance ESD implementation in Norway. This is also an opportune moment to research how ESD is currently practiced on a school level, and explore ways to better understand and respond to the types of barriers and leverage points existing in current implementation methods. Exploring current ESD-practices at a school can also assist in identifying the type of support needed to ensure ESD, and in turn SD as an interdisciplinary topic, is implemented effectively when the 2020 curricula renewal commences.

Whilst the Norwegian Education sector has a long history of SD principles being featured as a formal curriculum aim since the 1970's, research shows ESD is not yet integrated in practice for the majority of Education institutions (Andresen, Høgmo & Sandås, 2015; Sinnes & Straume, 2017); a gap is present between pre-existing ESD policy and what is seen in practice, therefore a need to research how ESD global policy is currently practiced on a school level in Norway is defined. A recent United Nations Education, Scientific and Cultural Organisation (UNESCO) report on ESD issues and trends (Leicht, Heiss & Byun, 2018) also highlights this gap between ESD policy and practice as a worldwide trend; indicating that despite recognition of ESD and ESD-practice seen worldwide, current approaches often fall short of achieving the learning objectives appointed to ESD. Leicht et al., (2018) report, for ESD to achieve the appointed learning objectives, a holistic integrated

approach to ESD is required, where ESD is taught in theory, as well as experienced in everyday school routines and practises.

The Whole Institution Approach (WIA) is a methodology identified by UNESCO (2017a) as a holistic integrated approach to implementing ESD and as a viable approach to achieve the United Nations ascribed ESD learning outcomes (Leicht et al., 2018). The WIA is recognised both within ESD policy and academic theory, thus providing a lens which ESD can be explored via multiple perspectives. Through utilising this WIA lens, the overarching research aim for this thesis is: To explore the implementation of ESD-practices in Norway from multiple policy, practitioner and academic perspectives.

For the purpose of this thesis, a Norwegian upper secondary school already committed to working with ESD, based in Eastern Norway, is used as a case study providing a predominantly practitioner-based perspective of ESD-practices. Through this WIA lens an analytical framework is created that allows ESD-practices at the case study school to be explored and benchmarked against. The analytical framework also provides the means to identify leverage points and barriers concerned with current ESD-practices. In addition to discussing the case study findings, the analytical framework is evaluated independently to highlight how holistic methods, such as WIA, can be utilised to advance ESD research, policy and practice. The following research objective was made: To explore a case study school's current capacity and approach for implementing ESD, and to identify possible key barriers or leverage points.

The findings presented are based on analysis from five semi-structured interviews. Four out of the five interviews were focus groups, in total eleven key actors were interviewed who are responsible for, or have directly experienced implementing ESD at the case study school; two County Council (C-C) education advisors, two members of school management,

two department heads and five teachers. The interviews took place in 2017 and 2018, with the 2017 interview data provided by *ESD in Practice*[1] a NMBU research project which subsequently is referenced throughout this thesis.

Lastly, the rationale for choosing to research ESD through multiple policy, practitioner and academic perspectives are due to the broad and multifaceted topics and perspectives that are incorporated in a holistic approach to ESD. Whilst choosing to study multiple perspectives of ESD was deemed essential achieving this within the limitations of a 30-credit master thesis has resulted in an ambitious and complex study area that at times has overreached.

Chapter Two: Education for Sustainable Development Global Policy and Norwegian perspective

This chapter defines the scope and purpose of this thesis and frames the development of ESD historically within UN global policy by linking SD to ESD. A rationale for why ESD is recognised internationally as a fundamental tool for achieving the SDGs is provided. This overview of ESD policy aims to highlight why ESD has a prominent role in addressing the SDG 2030, and subsequently introduces relevant international policy and key terms connected to ESD employed throughout this thesis. Lastly, how ESD has developed nationally in Norway, in terms of policy, research and practice are elaborated on.

2.1. The role of Education for Sustainable Development (ESD) within UN global policy

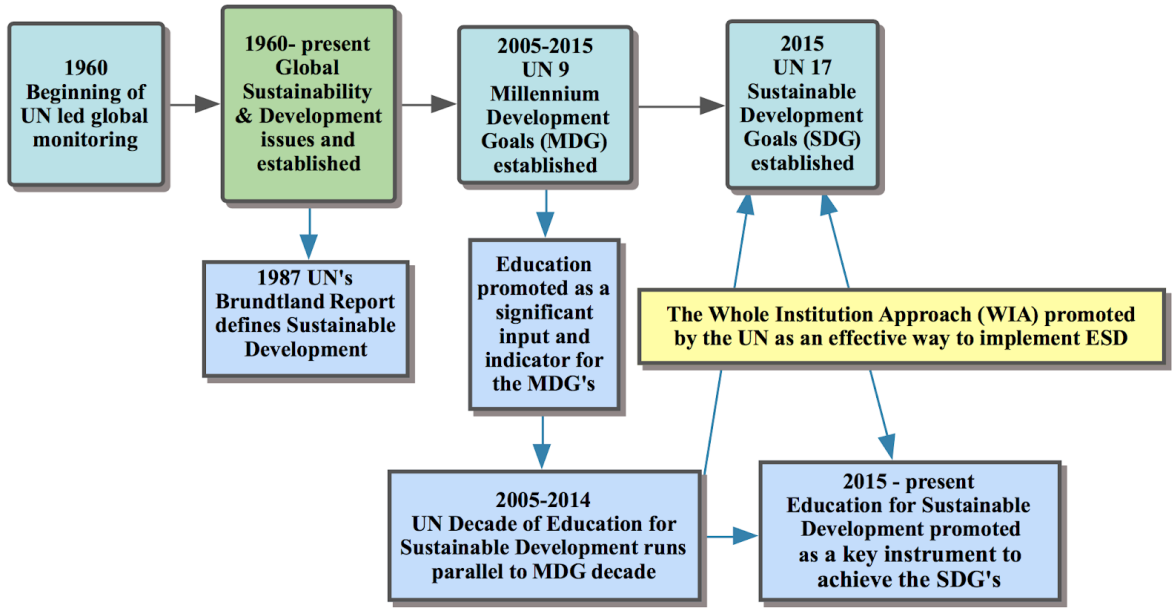
This section frames ESD within relevant UN global policy highlighting its role within the SD arena and exploring why ESD is now recognised as one of the approaches necessary to achieve numerous SDGs (UNESCO 2017a). This thesis argues that, due to this UN

[1] Due to this connection to the wider ESD in practice study for transparency purposes a full explanation and arrangement concerning this collaboration is detailed in the thesis forward, section xv.

commitment, an understanding of both SD and ESD on a national and global level is needed when exploring ESD-practices on a national and local level. Figure 1 illustrates key UN proceedings that led to ESD's establishment within the 2030 SD agenda, visualising the information presented in this chapter.

Figure 1

United Nations Sustainable Development policy timeline: Defining the role of Education for Sustainable Development



Note: **Copyright Rosalie Mathie 2018**

2.1.1. Sustainable Development

Despite SD becoming the remit for Nations and subsequent sectors of societies worldwide, the conflicting pressures, viewpoints, and priorities frequently surrounding SD issues, such as climate change, result in a complex picture that is often met with an apathetic response (Swim et al, 2009). Consequently, SD remains a multifaceted term with numerous interpretations. Conversely, UN policy has led to a shared definition of SD and global recognition of

sustainability issues. This thesis describes SD using the UNs 1987 Brundtland Commission definition: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCDE, 1987, p. 41). Historically, this definition framed environmental protection within a social and economic context and laid the foundations for SD to be considered holistically through three central dimensions; social, economic and environmental, the three pillars of SD (Pauw, Gericke, Olsson, & Berglund, 2015).

Today, UN global policy still strives to unite the world in achieving SD as the Brundtland Commission instructed over 30 years ago. However, the multitude and extent of our planet’s sustainability crisis is escalating, with societies worldwide operating beyond the world’s sustaining capacity, thus the world is increasingly facing challenges to foster ecological, social and economic sustainability (Broman & Robèrt, 2017).

2.1.2 Millennium Development Goals influence on the Sustainable Development Goals

Historically the UN’s (2005-2015) 9 Millennium Development Goals (MDGs) precede the SDGs. The MDG agenda acknowledged education as a significant input and indicator for the MDGs, and was built upon and expanded by the SDG 2030 agenda (UN, 2016).

2.1.3 Decade of Education for Sustainable Development

The UN Decade of Education for Sustainable Development (DESD) 2005-2014, ran parallel to the MDG agenda. DESD is described as leading the evolution of the term ESD and responsible for ESD becoming globally renowned (Pauw et al., 2015). The DESD’s roots are found within the 1992 Earth Summit, and the succeeding publication titled, Agenda 21, which sought, through the UN member states networks, to engage action in reducing the impact humans have on the environment on global, national and local levels (Wals, 2012). Whilst the DESD largely succeeded in promoting ESD globally, and lead to ESD being embedded in

curricula worldwide, research into how much ESD has infiltrated classrooms, or into the effectiveness ESD has on students behaviour towards SD, is lacking (Wals, 2012; Pauw et al., 2015). Since the DESD ended in 2014, ESD policy continues to predominantly be published by UNESCO, who are responsible for continuing ESD's advancement within the UN. The DESD is being monitored and followed up by the Global Action Programme (GAP) network (UNESCO, 2017a).

2.1.4 Sustainable Development Goals (SDG)

In 2016, the UN SDG 2030 agenda was unanimously adopted by all 193-member states (UN, 2015). This agenda provides both global recognition and a universal language that aims for all member states to engage with and examine SD. Moreover, the agenda explicitly calls on all nations and subsequent sectors of society to consider their potential roles in achieving the SDG's (UN, 2015, p. 7). The agenda emphasized an explicit need for SD to be implemented on national, sector specific and individual levels of society, championing 'we the peoples', a phrase originally used in the initial 1945 UN charter, to represent the request for all humanity, with their varying capacity, to engage with and build upon what the UN has set out through the SDGs (UN, 2015). Where the previous MDGs specified ensuring environmental sustainability as only one of the 8 goals, the 17 SDGs feature SD's economic, environmental and social pillars as a central thread throughout: The SDGs represent a momentous vision that recognises the need to tackle sustainability, alongside the need to tackle poverty, to build economic growth and to address social needs, for example, education, health and job opportunities (UN, 2016).

Of particular note is the emphasis that each country should lead and drive their own implementation of the SDGs 2030 agenda (UN, 2015). The SDGs also distinguish that member states are faced with different challenges which will inevitably lead to varied abilities

to fulfil the targets, as well as differing capacity and development levels in terms of the follow up and review process (UN, 2015). While the MDGs focussed on developed countries funding and solving issues within developing countries; the SDG's agenda emphasises that targets need to be met in both developed and developing countries (Kumar, S., Kumar, & Vivekadhish, 2016).

Even with amendments and lessons gained from the MDGs (Kumar et al., 2016), when embarking on a transitionary journey such as the SDG 2030 agenda, which opposes the status quo, many challenges will be met along the way. For example, what practicing SD actually entails is continuously debated, in particular if social and economic development can genuinely be achieved whilst also protecting the environment (Kopnina, 2014). Moreover, while various countries, like Norway, are reported as already making advancements, no country is currently on track for achieving all of the 17 SDGs (Sachs et al., 2018). Despite these debates and challenges, the SDG's represent a binding agreement, whereby all Member States have united in the agenda (UN, 2015). To summarise, The UN SDGs 2030 agenda, albeit grandiose and colossal in its ambitions, provide an agenda that all member states have agreed upon, that builds upon numerous past efforts and knowledge gained from previous UN agendas, such as the MDGs and DESD, putting environmental sustainability at its heart.

2.1.5 Education for Sustainable Development as an enabler for the Sustainable Development Goals

The term ESD is recognised as a central way in which education can be "a key instrument to achieve the SDG's" (UNESCO, 2017a, p. 7). A central reason for indicating ESD as a key instrument to address SD is largely due to the term's advancement and development during the aforementioned DESD. ESD is seen to provide a myriad of ways and approaches to engage societies in SD as it provides mechanisms to enable "individuals to contribute to [SD]

by promoting societal, economic and political change as well as by transforming their own behaviour" (UNESCO, 2017a, p. 8).

As with the aforementioned MDGs and DESD, due to the ambitious and complex nature of measuring and implementing such global goals, substantial gaps in terms of monitoring and evaluation are evident on international, national and regional levels. So, while ESD is recognised as a key enabler, it is difficult to measure the success of ESD and the SDG global agenda. Despite the numerous obstacles already presented, education sectors worldwide are increasingly taking up the challenge of engaging with and determining their role for supporting SD. In particular, formal education is being challenged by, "the global sustainability agenda [which] calls for a school education that fosters awareness of the complexities and uncertainty of the surrounding world" (Mogren, Gericke & Scherp, 2018, p. 1).

In this thesis, formal education is the focal point, however ESD is interpreted in a myriad of ways, ESD occurs and is encouraged in all forms of education, informal and non-formal settings, through grassroots organisations, charities and NGOs (Leicht et al,. 2018). This multi-pronged approach also highlights the need for contextualising sustainability or SD on a local level where a no 'one size fits all' approach to ESD is found (Leicht et al., 2018). As with the term SD, ESD also has numerous interpretation within national and international policy, private sectors, grassroots organisations and academia; all of which add to the complexity of monitoring and evaluating ESD.

Whilst there has been a natural progression towards establishing a definitive definition of ESD, even the UN has varying interpretations of ESD. This variation in ESD terminology is partly due to ESD's natural evolution since its conception, and part due to ESD becoming an internationally recognised term that will inevitably be interpreted differently, dependant on

what level one engages with it. One succinct explanation of ESD is given on UNESCO's ESD website, that describes ESD as "empower[ing] people to change the way they think and work towards a sustainable future" (UNESCO, 2018, para. 1). Whilst the semantic variation of ESD definitions pose cause for concern, for the purpose of finding the most recent definition ascribed by ESD policy, and to build upon the aforementioned ESD definition given in chapter 1[2], this definition is also referenced:

> ESD empowers learning to take informed decisions and responsible actions for environmental integrity, economic viability and a just society for present and future generations, while respecting cultural diversity. It is about lifelong learning and is an integral part of quality education. ESD is holistic and transformational education, which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society (UNESCO, 2014, p. 11)

This ESD definition is found both in policy briefings given by GAP as part of their remit for following up the DESD, and on UNESCO's website (UNESCO, 2018).

2.1.6 The Whole Institution Approach (WIA): A policy perspective

The WIA builds upon an integrated, interdisciplinary approach to education that utilises key ESD pedagogical approaches; action orientated learning; transformative learning and a learner-centred approach, enabling all aspects of a school, not just the curriculum, to embody SD principles (UNESCO, 2017a). Throughout the DESD the WIA rose in popularity, being highlighted as both a promising and effective approach to ESD that is described as a method that goes beyond teaching content based ESD (Wals, 2012): "The introduction of [WIA] may have led to the realization that meaningful progress towards sustainability and its supporting education and learning can best be achieved when multiple actors engage in a whole-system redesign" (Wals, 2012, p. 77). Due to this recognition of the WIAn the approach is chosen as

[2] UNESCO (2017a), describe ESD as an essential element of both quality education and lifelong learning, that empowers individuals to take responsible actions to achieve the transformation of societies in a respectful and just way, for both present and future generations.

an ESD benchmark for this thesis, offering the means to identify leverage points and barriers concerned with current approaches to implementing ESD. The WIA provides an academic lens to evaluate current ESD-practices, thus providing the multiple perspectives called for in the thesis research aim.

2.2. Education for Sustainable Development in Norway - A policy and research perspective.

Whilst this thesis does not focus on political and theoretical debates concerning ESD's meaning, these debates and semantic differences impact how ESD is interpreted on a national level, therefore they cannot be ignored entirely. Section 2.2.1 explores how Norway has responded to ESD historically, considering aspects of how ESD policy has been implemented on a national (Norway), and sector (Education) specific level. By exploring the progression of ESD-practices in Norway a deeper understanding of the potential ways to support educational practitioners in implementing ESD more effectively in the future is found. Section 2.2.2. presents a synopsis of Bjønness and Sinnes (2019)[3] article based on four case study schools' current ESD-practices.

2.2.1. General overview of Education for Sustainable Development in Norway

In general, Norway has an exceptional social system, ranking third in the world happiness index (Helliwell, Layard & Sachs, 2019). The country also boasts a high level of national priority for education, with 30% of its gross domestic product per capita spent on formal education (OECD, 2019). Norway also has a long-rooted history and affinity with SD principles that continues to be showcased with their current commitment to numerous SDGs

[3] The findings presented in this *ESD in Practice* article are also used as a form of corroboration of this studies findings. This connection is explained in the thesis Forward, page. vi

international targets (UN Norway, 2016). Consequently the SDG 2030 agenda is recognised by Norway "as a transformative global roadmap for our national and international efforts aimed at eradicating extreme poverty while protecting planetary boundaries and promoting prosperity, peace and justice" (UN Norway, 2016, p. 1). SD has been included in Norway's formal education curriculum in some guise since the 1970's, with various subsequent additions placing ESD affiliated principles as part of the core curriculum (Andresen et al., 2015; Sinnes & Straume, 2017). This, while not explicit, eludes to Norway's education policy accepting global policy definitions of ESD and proposed ways, such as the WIA, in which to implement it. Also, of note is the direct influence the Brundtland Commission had on Norway, both in general SD terms, and by marking a pivotal point whereby the economic and social aspects of SD were brought into Norway's formal education system (Sinnes & Straume, 2017). Consequently, the Brundtland Commission is known in Norway for enabling recognition of how education cultivates environmentally conscious citizens (Laumann, 2007). Whilst packaged with different terminology over the years, Norway's current curriculum KP-06, (which kept the 1994 core curriculum) holds the overarching goal for all schools to educate environmentally conscious people, with the following values presented in the core curriculum:

> Education must therefore provide a broad awareness of the interconnections in nature and about the interplay between humans and their habitat. (The Norwegian Ministry of Church and Education (1994)… Our way of life and our form of society have profound, threatening effects on the environment. [...] It increases the need for more knowledge, more holistic knowledge, and for more conscious ecological, ethical and political decisions made by individuals, and by society as a whole [...] (Andresen et al., 2015, p. 243)

A high bar has been set for ESD's future implementation with the upcoming 2020 national curricula renewal. In a Norwegian Gov., (2018) press release and UDIR's (2019)

overview of the curricula renewal, proposes SD as a core interdisciplinary topic alongside; health & life choices; and democracy & citizenship. The press release (Norwegian Gov., 2018) emphasised that these proposed themes are to be delivered via topics that naturally traverse several subjects based on current social challenges and dilemmas, and that students should understand the relationship between actions and choices and know how to find solutions both through attaining knowledge and using technology. These proposed curricula renewal plans, alongside Norway's existing ESD related policies, indicate Norway's choice to take a more active role in administering the development and implementation of ESD. Thus, the upcoming curricula renewal has the potential means to support more widespread implementation of ESD.

As a response to the DESD in Norway (in 2009), The Sustainable Backpack[4] (DNS) was established that facilitates a nationwide network of teachers, school leaders, teacher-educators and external actors, developing ESD teaching and learning practices (Korsager & Scheie, 2015; Scheie, 2017). DNS provides funding and support for ESD related projects which includes ESD competency training for both teachers and school leaders. DNS also monitors and evaluates ESD related school projects. In Korsager and Scheie (2015) four key factors are identified as necessary to facilitate action competencies in students and for a school to implement ESD; 1. support and vision from school leaders; 2. local community partnerships; 3. support from school owners; 4. for multi and interdisciplinary projects to be supported. There are also other Environmental Education networks such as; the Eco-school green flag accreditation scheme run by the Foundation for Environmental Education; and Sustain[5], who provide online training support, project ideas and tools for ESD and is utilised nationally and internationally (Andresen et al., 2015). However, even with these ESD

[4] In Norwegian, Den Naturlige Skolesekken (DNS)

[5] In Norwegian, miljolære (Sustain)

networks existing, and Norway's formal education sector having this long history of teaching SD's theoretical principles, research shows that SD is not yet integrated in practice in the majority of Norway's education institutions (Andresen et al., 2015; Sinnes, & Straume, 2017). Monitoring and evaluation of ESD related projects in Norway, in particular information regarding this reaching the policy level is also reported as not place (Andresen et al., 2015). Moreover, whilst ESD is viewed as important by teachers, few schools have succeeded, nor are they choosing to integrate ESD within the current curriculum framework (Sundstrøm 2016; Sinnes & Straume, 2017). This discrepancy, or what could be seen as a contradiction, reveals gaps between ESD related policy and widespread implementation of ESD-practices in Norway. This also questions how influential ESD related policy, spanning the last 5 decades, has been on schools integrating ESD.

Norway is often grouped and compared within a wider 'Scandinavian' context, as one of five Scandinavian countries, thus viewing Norway beside its neighbouring countries provides a wider context and comparison point; in terms of ESD policy, and effectiveness of ESD-practices. Within this Scandinavian context, Norway's ESD contribution and implementation strategy have been depicted as lagging behind their Scandinavian neighbours (Sinnes & Straume, 2017). Since the end of the DESD Sweden and Denmark continue to take an active role in UN related ESD research and policy groups such as GAP, whereas Norway is not represented within the GAP member networks, or subsequent UNESCO affiliated ESD pilot school schemes[6]. Whilst it is unknown if this lack of public engagement with ESD global policy is within Norway's power to choose, this could in part explain why Norway is viewed as lagging behind.

[6] When undergoing preliminary research for this thesis both UN Norway and GAP were contacted via email correspondence as potential ESD case study providers, upon which this knowledge of Norway not taking an active role was obtained.

Moreover, current research determines that the DESD made little impact on Norway's education system, in terms of effectively implementing ESD in a comprehensive and binding way: Instead, fragmented approaches to ESD are reported as commonplace (Andresen et al., 2015; Sinnes & Straume 2017), and little, if any examples of schools working with ESD in an in-depth way (Bjønness & Sinnes, 2019). Bjønness and Sinnes (2019) point out Straume's (2016) evaluation; that even though a strategy was created for ESD during the DESD, it was never set out in action plans or competence goals for schools, thus having little impact on school practice. With this insight, an observation made by Laumann (2007) could continue to ring true; that the Norwegian UNESCO commission chose not to prioritise ESD because the existing policy contributions and progress made concerning ESD were deemed to be sufficient and therefore not requiring further effort. Thus although Norway openly supports the concept of ESD, ESD has not been prioritised in relation to ensuring that it has had widespread implementation (Andresen et al., 2015). Whilst criticisms of Norway's approach to ESD can be found in various reports and research studies, little mention is found in Norwegian SDG Policy documents. Instead, education in general terms, such as equal access to education, is referenced in current SDG related policy documents such as UN Norway's (2016) SDG voluntary review. Specific mention of utilising ESD seems to be limited to a general statement regarding the awareness of the SDGs: "As far as spreading knowledge about the SDGs is concerned, the recommendation by the Ministry of Education to include the SDGs as part of the curriculum in schools is valuable" (UN Norway, 2016, p. 2).

Also of note is Andresen et al., (2015) summary that calls for; additional ESD monitoring and evaluation; the whole-school approach (WIA) to be linked to ESD external actors such as Sustain (Milolare) and DNS; for more support provided for schools and their local authority owners (C-C) to create ESD strategies together; for existing networks such as

Sustain to be utilised more in order for ESD to become more mainstream and advanced in Norway; and for a curricula renewal to take place. It is clear the effectiveness of ESD-practices within schools where ESD has been implemented, also necessitates further enquiry alongside understanding further why these policy/practice gaps exist. Also, with Norway's current commitment to elevate SD principles in the upcoming curriculum renewal (UDIR, 2019) a need for additional academic studies regarding ESD-practices in Norway is evident. Consequently, the value of researching if and what type of barriers are currently impeding ESD in a Norwegian school context, and in turn, exploring what can be done to support ESD's future implementation in Norway is established.

2.2.2. 'ESD in Practice' current research in Norway (Bjønness & Sinnes)

Bjønness and Sinnes (2019)[7] article, *Exploring drivers and challenges for the implementation of ESD in upper secondary school*, provides an up-to-date account of ESD-practices in Norway. Figure 2 provides an overview of the factors Bjønness and Sinnes (2019) found to either support and/or constrain ESD-practices at four[8] case study upper secondary schools.

[7] due to this thesis case study school's connection to the ESD in practice research, the details of which are presented in the thesis Forward VI
[8] One of which is the same case study School this research is based upon

Figure 2

SD factors which supports and/or constrains ESD in practice at the four case study upper-secondary schools

factors	support	constrain
New curriculum	X	
School leadership	X	X
External actors	X	X
Teachers' autonomy	X	X
Student council	X	X
School owner/ County council	X	X
Garbage handling and canteen	X	X
Assessment practices		X
Parents		X

Note: **(B. Bjønness, Trans) Copyright Bjønness & Sinnes, 2019, p . 8**

While 8 of the 9 factors (Figure 2) identify as ESD inhibitors, the same amount of leverage points exist for improving future ESD-practices. Bjønness and Sinnes (2019) view the majority of inhibitors also as leverages partly because all participants interviewed were positive to SD becoming further embedded into the curricula. However, they also concluded, "the interviewees point to each other when it comes to taking the initiative to develop ESD locally; this can result in a pulverisation of responsibility as long as everyone, 'sits on the fence' waiting for others to take the initiative (Bjønness & Sinnes, 2019, p. 2)".

Bjønnes and Sinnes (2019) question whether including SD amendments in the upcoming curricula renewal will be "[...]sufficient for developing an interdisciplinary understanding and the action competence that is necessary to prepare the students for living sustainable lives in the future" (Bjønness & Sinnes, 2019, p. 2). This questioning also confirms Laumann's (2007) prior concerns over SD not being prioritised in secondary school are still felt today. In terms of interdisciplinary teaching methods, Bjønnes and Sinnes (2019) report that both students and teachers interviewed view an interdisciplinary approach to ESD as difficult to implement and due to other pressures such as time issues and exam demands view it as additional to the normal curriculum.

Also presented is how teacher autonomy is seen as an inhibitor and promoter of increasing SD focus in the schools; Bjønness and Sinnes (2019) highlight that the school owners (C-C) saw protecting teacher and the schools' autonomy as influencing why their role was viewed as facilitators of ESD, instead of ensuring ESD was a mandatory requirement. The C-C participants said a more explicit political decision would be needed in order to make implementing ESD a mandate (Bjønness and Sinnes, 2019). The article discussed discrepancies between what was taught in theory at the schools and what was reflected in the school's everyday life, for example mentioning how services such as the canteen and waste management were commonly subcontracted, making it difficult to transfer theory into practice. One head teacher interviewed identified an issue with "[...] the students having food waste projects, but that their own school canteen is a 'blind spot' " (R Mathie, Trans) (Bjønness & Sinnes, 2019, p. 14). Lack of motivation to work with ESD was linked to concerns around school assessments placing pressure on students, teachers and parents to focus primarily on achieving good test results and GPA, and connected to ESD being viewed as not counting towards achieving high grades (Bjøness and Sinnes, 2019).

Assessment practices and parents were only reported as an inhibitor to ESD; with Bjønness and Sinnes (2019) emphasising the need for ESD to be viewed by students, parents, teachers and management as part of the general curriculum and not as a separate time-consuming addition. Consequently, their article emphasises the need for each and every actor connected to the school's ESD implementation to be made accountable and take an active role supporting ESD-practices. Consequently Bjønness & Sinnes (2019) call for an interdisciplinary approach to SD to be promoted and included as a concrete binding learning objectives throughout the school's new curricula.

Chapter Three: Methods

This chapter presents the research statement, aims, objectives, followed by the research questions, research design and rationale for choosing a qualitative case study and other selected methods. The research process planning and implementation, data collection, and analysis phases are also presented, including relevant case study background information, ethical considerations and thesis limitations.

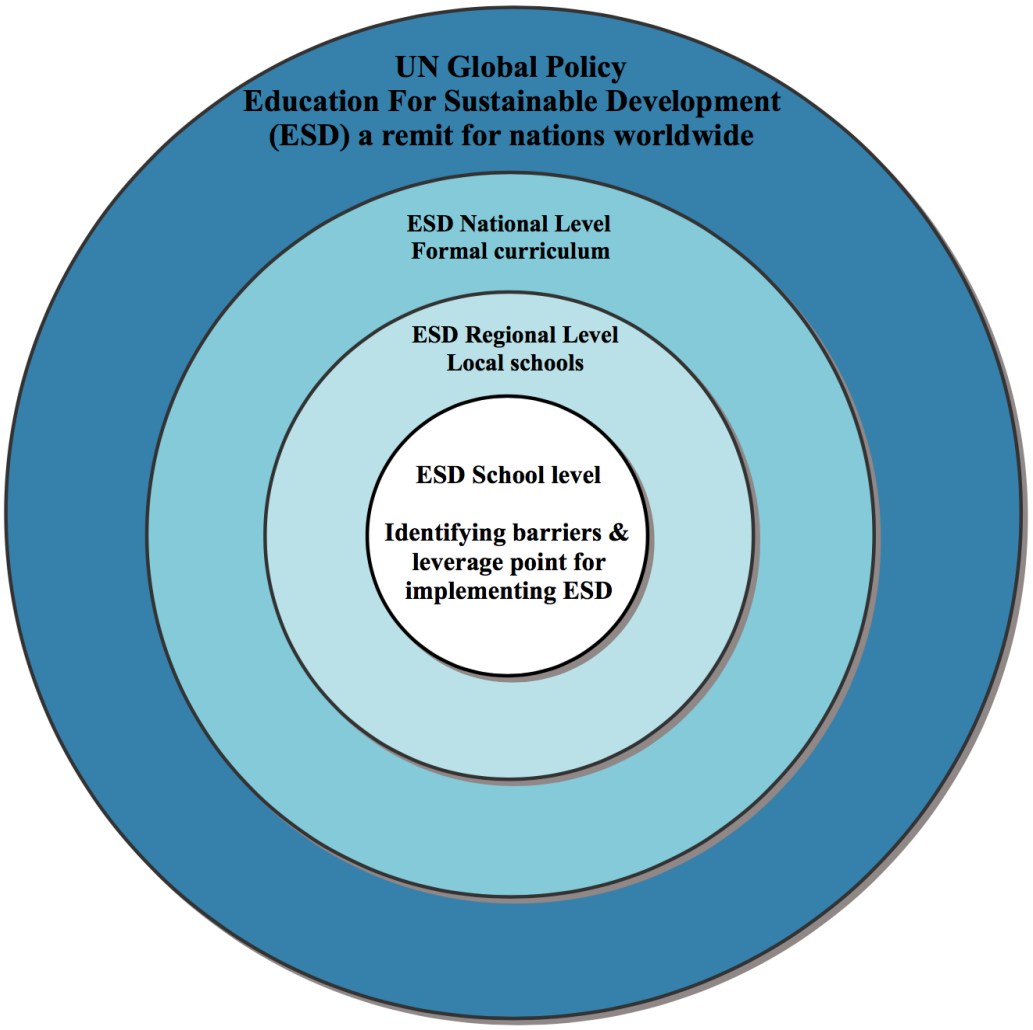
3.1. Statement of thesis aims and objectives, research questions and rationale

Through utilising a WIA lens the research aim is to explore the implementation of ESD-practices in Norway from multiple policy, practitioner and academic perspectives. A case study investigating ESD-practices in a Norwegian based upper secondary school is the chosen research method. While the individual school is the main research focus, visualising the links and therefore potential gaps that can exist between an individual school, local, national, and global policy is also considered (Figure 3). While ESD theory and policy is

present in local, national and global levels, what actually takes place within a single Norwegian school is inconsistent with what is ascribed within existing education policy (Andresen et al., 2015; Sinnes & Straume 2017). Therefore, a single case study approach was deemed appropriate to consider how all these levels of education policy interrelate (Figure 3) and how they are interpreted in practice.

Figure 3

Visualising the interrelation of ESD policy and practice on school, local, national and global levels



Note: ***Copyright Rosalie Mathie, 2018***

Additional rationale for studying ESD-practices in Norway is summarised as follows: Norway, alongside their Scandinavian neighbour's rank in the top 10 Member States set to achieve "the best possible outcome across the 17 SDGs" (Sachs et al., 2018, p. 12) and are globally recognised as leading the way in various SD advancements. Also, SD and ESD principles have featured in Norway's formal curriculum since the 70's, so Norway is observed

as already engaging with SD and ESD. Lastly, despite the aforementioned SD and ESD attributes, Norway's engagement with the DESD has been criticised as having little impact in effectively implementing ESD in a comprehensive and binding way (Andresen et al., 2015; Sinnes & Straume, 2017).

To recap, through utilising the WIA lens, the research aim is to explore the implementation of ESD-practices in Norway from multiple policy, practitioner and academic perspectives. In order to do this, the research objective, to explore a case study school's current capacity and approach for implementing ESD, and to identify possible key barriers or leverage points is set. In turn, three research questions are established:

RQ 1. Can any barriers for implementing ESD within the school's current practice be identified, and if so, what are the most prominent ones in terms of the WIA?

RQ 2. Can any leverage-points to implement ESD more effectively at the school be identified, and if so, which are most key in terms of the WIA?

RQ 3. Can any future considerations concerning utilising the WIA lens to explore ESD-practice in Norway be identified in this study, and if so, what are they?

3.2. Research design - rationale for choosing a qualitative case study, population, sampling and data collection methods

A qualitative case study is described as an in-depth analysis of one single case, such as a single community, school, family organisation, person, or event (Bryman, 2016). For this thesis, the single case is a state-owned upper-secondary school based in Eastern Norway. The

school was chosen as a purposive sample school due to their pre-existing commitment to implementing ESD and connection to *ESD in Practice*. A case study approach presented a way in which a thick and rich description of a school's current experiences of working with ESD could be ascertained. Examining how ESD is currently interpreted by practitioners working with ESD at school, was also identified as a way to consider how the school could be better supported to engage with and implement ESD in the future. The case study approach was also selected due to its ability to provide multiple perspectives, which in turn could provide a better understanding of why, despite existing policy, recent studies indicate there is not a widespread implementation of ESD in Norwegian schools. It was decided to initially collect data by gathering perceptions, ideas, and opinions from a small selection of semi-structured in-depth interviews with individuals who were in some way, connected to implementing ESD at the case study school. The semi-structured interview approach was chosen firstly for consistency and ease when analysing the data, as this style would follow the *ESD in Practice* 2017 interviews. Also, as Berg & Lune (2012) describe, this style can provide equal measures of structure and flexibility necessary to permit systematic comparisons. Lastly, semi-structured focus group interviews allows for a significant amount of information to be collected in a short time (Berg & Lune 2012). It was estimated 4-6 interviews would be needed in 2018, however, data collected from just 2 interviews, when combined with the 2017 interview data was deemed sufficient.

As the case study was purposively selected, it was also decided to purposively select the participants. A list of requirements was made in order to purposively select relevant transcripts from the *ESD in Practice* interviews to use as primary data and identify new participants. The population sample was restricted to interviews with teachers or members of management who directly worked with or supported ESD at the case study school. So, while

multiple data collection sources were made available, the student interviews were excluded from the research design the aim was to focus on primarily a practitioner perspective of ESD. Also the study's limited scope as a 30-credit thesis and consequent time constraints[9] also were factored in.

During the design phase, thematic analysis was suggested by the *ESD in Practice* research team as a way to analyse the interview data. Thematic analysis (TA) is "an iterative and reflective process that develops over time and involve a constant moving back and forward between phases" (Nowell et al., 2017, p. 4). Utilising a thematic analysis approach is well known for its theoretical flexibility (Braun & Clarke, 2006) and widespread use, thus removing the need to employ a specific theoretical approach. Furthermore, thematic analysis was chosen to align with *ESD in Practice* own analytical approach and was presented as a method often used in educational research. Additionally, to ensure thick descriptions of the research context, a reflexive journal was used throughout the whole thesis process to document the researcher's internal and external dialogue.

3.3. Methodological underpinning - Thematic Analysis through A Whole Institution Approach lens

Instead of choosing a specific theoretical framework to explore, test or verify specific pedagogical theory concerning ESD, the WIA provides a lens through which to analyse and evaluate ESD-practices in the case study school. The WIA was chosen as a lens due to its holistic, integrated approach to understanding ESD and for its flexibility to be considered both

[9] Also, as the authors faculty does not directly focus on researching ESD it was significant to find another faculty within the same university researching ESD-practices. Therefore, it was decided by the *ESD in Practice* research team to find a way in which a collaboration could take place that was beneficial to both parties. Various ideas were discussed which inevitably led to access being granted to one of the studies 4 schools. Another of the reasons for this school being selected is that they were currently receptive and available for further interviews, whereas the other schools did not, for various reasons, have the capacity.

from a theoretical and policy-based stance (Shallcross, 2003; UNESCO 2017a). By bringing together examples of ESD-practice documented in both policy and academic research, the WIA provides a baseline, a type of ESD benchmarking on which the case study school could be measured. The aim was through the WIA lens an understanding of what has and has not been effective in terms of ESD-practices could be achieved. Moreover, thematic analysis "through its theoretical freedom, [...] provides a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex account of data" (Braun & Clarke, 2006, p.78). Therefore, through utilising both thematic analysis and the WIA lens, the development of an ESD analytical framework through which the case study could be explored from was formed, and is explained further in the next section.

3.4. Research process implementation - actual execution of the study

This section aims to provide the necessary background information and rationale for choices made after the research design phase was completed and throughout the research implementation stages. Relevant case study background information is provided, followed by an account of the research process; including the data collection, data analysis, ethical considerations and thesis limitations.

3.4.1 Case study background and research implementation

There are 8 Counties making up Norway's Eastern region. The case study school is one of 36 upper secondary schools situated within one of the region's largest counties with over half a million inhabitants[10]. The school has 700 students and 125 staff members. In 2016, the school

[10] Further statistics: Norway has a population of 5 295 619. There are 416 upper secondary schools in Norway with a total of 189 657 students attending this level of education in the academic year 2017-2018 (UDIR, 2018).

made a public commitment to integrate SD into the school's strategy connected to local, regional and national SD policy which goes under the name of the green-shift (grønt skifte) agenda[11]. This existing SD commitment, alongside their involvement to take part in the *ESD in Practice* research study, were the purposive reasons for choosing this school.

In total, 12 transcribed interviews were collected in 2017 from *ESD in Practices* four participating schools. Of these 12 interviews, four of them were connected to this study's case study school. Three out of the four transcripts were subsequently included in this study's findings analysis as they provided relevant in-depth understanding of the school's ESD-practices from the perspectives of teachers, management and C-C representatives. The three chosen interview transcripts were originally transcribed by Astrid Sinnes and Birgitte Bjønness, totalling 20 pages which were later translated to English by the author of this study. The 2017 interviews lasted between 30-60 minutes.

Participants who were originally interviewed in 2017 were then contacted and asked to refer other colleagues, teachers, and management who were experienced with implementing ESD at the school. Thus, what was originally a purposive sample can also be described as a snowball sampling approach. These recommendations produced three participants, two teachers and the Deputy-head, who were interviewed in March and April 2018. After initial

"General upper secondary education consists of upper secondary level 1 (Vg1), upper secondary level 2 (Vg2) and upper secondary level 3 (Vg3) (Years 11, 12 and 13). Pupils are normally in the age group 16–19, but they may be older" (UDIR, 2018).

[11] Norway's national Green shift strategy: "The government forwards a strategy for green competitiveness. A continuously stricter global climate policy and an ever faster technological development changes the overall conditions for Norwegian business. The strategy for green competitiveness, which the government presents today, will prepare Norway towards seizing the new opportunities that the green shift offers" (Nowegian Gov., 2017). More information regarding Green shift is found here: Grønt skifte – klima- og miljøvennlig omstilling https://www.regjeringen.no/no/tema/klima-og-miljo/klima/innsiktsartikler-klima/gront-skifte/id2076832/

data analysis took place in April 2018, it was decided there was sufficient data in which to examine the research questions and objectives, so no further interviews requested.

An additional interview guide (Appendix 1) was formulated for the 2018 interviews, utilising the original 2017 *ESD in Practice* interview guide (Appendix 2) as a reference point. By building upon the original 2017 interview guide, with numerous questions chosen to repeat, this ensured data from each set of interviews could be analysed comparatively. Additional questions were also added for the 2018 interviews concerning WIA themes (Appendix 1). A visual concept map (Appendix 4), concerning the WIA to ESD was shown to the participants to act as a discussion prompt and a way for the participants to visualise the approach. This concept map was presented in Mathar (2016, p. 403) chapter as part of Germany's ESD Curriculum Framework contribution to GAP. In terms of interview style, all 2017 interviews were focus groups consisting of 3 participants, with either Astrid Sinnes and/or Birgitte Bjønness as moderators. For the 2018 interviews, the author of this study was the moderator of the discussions. The first interview was a small focus group interview with two teachers directly responsible for implementing ESD. The second interview was with the Deputy-head. The 2018 interviews were predominantly in English with some sections spoken in Norwegian. Hence, where appropriate, these interviews were also translated from Norwegian into English by the author. Each interview lasted between 50-90 minutes and were then transcribed by the author of which totalled 34 pages. A total of 11 participants, representing four key groups of actors who are connected to ESD-practices at the school make up the final interview data selection consisting of; 5 school teachers; 2 department heads; 2 school management staff; and 2 C-C Education department representatives.

3.4.2. Data Analysis - Thematic Analysis

Thematic analysis (TA) can be described as involving six stages crafted by Lincoln and Guba (as cited in Nowell et al., 2017). This next section outlines what processes happened at each of the six data analysis stages. Each stage followed the Nowell et al., (2017) TA guidelines as to ensure the trustworthiness of this study. The TA approach taken is abductive, an approach also used in the *ESD in Practice,* where inductive and theory driven coding are alternated (Bjønness & Sinnes., 2019).

The first step, familiarising yourself with the data, started when the pre-existing interview transcripts were read prior to the data collection phase. They were then read again, alongside the additional interview transcripts at the post data collection phase. At this point all of the interview transcripts were translated and discussed in meetings with the *ESD in Practice* research team, where the nuances and the authors interpretation of the data was considered.

In the second step, generating of the initial codes, five themes emerged to initially code the interviews; Curriculum; School routines and Structure; Policy and Practice; External actors, and Monitoring and evaluation. These themes were derived from various ESD frameworks collated in the analytical framework (section 4.6). This analytical framework also links to the content covered in the interview guides (Appendix 1 and 2). In the initial coding phase, all teacher interviews from 2017 and 2018, were chosen as the starting point for the TA third step, searching for themes, and the fourth step, reviewing themes. Initial review showed that the themes worked as a relevant and logical way to code the transcripts, with various recurring entries identified in both interviews. Sub-themes were identified at this stage to assist identifying entries discussing similar content. The TA fifth stage, defining and naming themes, took place after the first phase of coding, however only minor changes were made to the theme's names. Then, another three rounds of codings were carried out (repeating TA step

3-5). In the second coding, still only considering the data from the two-teacher focus group interviews, additional sub-themes were created.

In order to further analyse the findings each sub-theme entry was analysed to identify whether it was discussing a potential barrier and/or leverage point concerning current ESD-practices. As the interview questions specifically asked for the participants to discuss barriers or leverage points[12] it was the participants' own interpretation of these terms that lead this process. Further analysis was then given, in terms of how the author defined these terms, to identify any potential barriers and leverage points connected to the entry when considering the schools future ESD-practice. A third coding was carried out on the remaining data; the management and C-C interview transcripts. A fourth and final phase of coding ensured that any entries that had not been further organised into a sub-theme, for example as it had only been mentioned once, were analysed again to identify any relevant points were missed in the initial coding stages.

It was decided the sixth stage of TA, corroborating findings, could be achieved by multiple peer discussions, supervisor guidance and lastly through comparing these findings to the more broader *ESD in Practice* findings that have overlap to this research. The ESD in Practice findings were shared in both the draft article (B. Bjønness, personal communication, June 26, 2018) and at a later stage in the published article (Bjønness & Sinnes, 2019). The final TA stage, to produce the report, is presented in chapter five. The 5 overarching themes were utilised as a frame in which the case study findings could be presented. The findings were then shared with the thesis supervisor and ESD in Practice research team.

It is beyond the limited scope of this thesis to discuss all the ESD related future considerations, leverages and barriers identified. Therefore, findings not selected to present in

[12] In the ESD in Practice interview questions the exact words barriers and leverages were not used, however, the interviewees still directly discussed what they could see as barriers and leverage points

the discussion have been removed from the main thesis and can be found in Appendix 5. The findings selected are identified[13] as starting points, whereby future research is required if the findings are to be analysed in more depth. The selection process for identifying 'prominent' and 'key' findings, utilised the WIA lens to determine how essential each finding was in terms of effective ESD implementation, the findings were also compared to ESD policy and theory selected for the analytical framework. Selecting findings most relevant to address each of the thesis research questions was also considered.

3.4.3. Trustworthiness and rigour (data collection)

It is clear as a master thesis study, the credibility is limited by the novice, inexperienced researcher (Braun & Clarke, 2006). However, measures were taken to achieve the most credible of outcomes possible. Trustworthiness and rigour were used as guidelines for this purpose. Trustworthiness developed in 1989 by Guba and Lincoln (as cited in Bryman, 2016) offers alternative criteria to reliability and validity for evaluating qualitative research and was used as a form of assessment throughout this thesis for two reasons: First, the belief that it is possible to have more than one, or several views of the social world, there is no absolute truths (Bryman, 2016). Second, the belief that the criteria underpinning trustworthiness; credibility, transferability, dependability and confirmability (Bryman, 2016; Nowell et al., 2017), provide the means in which to assess and guide a qualitative case study approach. The following section reflects on how the criteria; credibility, transferability, dependability and confirmability have been addressed.

Credibility: Due to the association with *ESD in practice*, and that this thesis was written over multiple semesters, due to part-time study agreement and unforeseen circumstances, a prolonged relationship with the case study school and *ESD in Practice*, dates

[13] By the author of this study via an iterative process that took trustworthiness and rigor into consideration.

back to the end of 2017. This longer time span was longer than the usual 5months allocated for a 30-credit thesis. This prolonged engagement (Nowell et al., 2017) has allowed for a longer period in which correspondence with the school could be observed and reflected on and provides a level of observation that would not be possible within a shorter period. Throughout the research period, peer debriefings (Nowell et al., 2017) with my main and co-supervisor, a fellow International Environmental Studies master's student, and the *ESD in Practice* team, provided the means to externally oversee the research process. These meetings also helped to corroborate that the direction of the study was on course, and the preliminary findings were credible. However, a limitation is that whilst other researchers had reviewed the findings, other circumstances meant it was not feasible to get feedback from the participants directly before submitting the thesis, which would have allowed for additional credibility.

Transferability: Whilst the account and interpretations of the interviews are uniquely the authors own interpretation of events, reflexive journals kept throughout the thesis process, alongside the information collated through the coding process, provides a thick description, that allows for "those who seek to transfer the findings to their own site can judge transferability (Lincoln & Guba, 1985)" (Nowells et al., 2017 p. 3). Through contextual uniqueness of the case study, a thick description is also provided for (Bryman, 2016).

Dependability: This research aims to, as Nowell et al., (2017) suggest, provide clearly documented, logical and traceable records of the research process, collection and analysis stages. An auditable set of records include interview transcripts, field notes, audio recordings of interviews, forms of consent, research files and personal reflexive journal. Internal reviews also took place at various points in the form of employing the *ESD in practice* schools' coordinator to review; the methodological approaches taken; the content of the 2018 interview

transcripts; and draft versions of this thesis. Prior to publication, when specific graphics or specific academic approaches were included in this thesis, consent was obtained.

Confirmability: Nowell et al,. (2017) calls for necessary documentation to be provided that showcases: findings are clearly derived from the data collected; the reasoning as to why the theoretical methodologies were chosen; the bias and reasoning for including the researchers externally derived subjective reflections; and a clear picture of how this study is connected to a larger ESD study. The aim is through these measures, alongside the combination of credibility, transferability and dependability, confirmability is attained. This all contributes to the readers ability to gauge and clearly understand why certain choices were made throughout the study and ensuring that trustworthiness of this study is achieved (Nowell et al., 2017). This is discussed further in the next ethical considerations section.

3.4.4. Ethical considerations

A central part of ethics within social science research is "the avoidance of harm to human subjects" (Berg & Lune, 2012). Measures were taken throughout the research process to ensure this thesis achieves this principal ethical concern, alongside following other basic research ethical principles such as respect, consistency, fairness and integrity that NMBU also mandate. In regard to participant consent, informed consent was obtained through a signed personal agreement requesting consent for participating in the *ESD in Practice* research project was signed by all participants both in 2017 and 2018. It was appropriate for the additional 2018 to sign the same agreement as their participation with this large study will last beyond this thesis study parameters, with relevant data shared and stored by this projects department. The agreement clearly stated the background and purpose for the project, what participating in the project will entail and stated that the names of individual participants will be kept confidential. The *ESD in Practice* study has also been reported to the data protection

official for Research, NSD - Norwegian Centre for Research Data. Participants have not been individually named to protect confidentiality; however, it was decided that naming the research project and researchers leading this study was appropriate as this is public knowledge.

Issues concerning confidentiality and anonymity have been an ongoing discussion, in particular the conflicting demand to also provide adequate thick description and aforementioned measure to provide confirmability. While thick description helps to ensure transferability, the importance to maintain a lasting relationship with the school was also flagged up as a reason not to include some of the data that could do harm, for example, to an individual's reputation. Therefore, the decision to ensure anonymity was of particular importance as the main role of the *ESD in Practice* study is to actively support the school in their journey with implementing ESD, a relationship which may last beyond the *ESD in Practice* 2021 end-date. Therefore, whilst maintaining a critical stance, the nature in which the schools current ESD efforts, both aspired for and achieved, has been carefully considered with the sincere hope to give a balanced and respectful view of the capacity and ability a school has to work with ESD.

3.4.5. Limitations

In relative academic research terms, this 30-credit thesis has limited scope. However, clear objectives were still defined that aimed at contributing to the field of ESD research in Norway. Whilst it is commendable to have these overarching aims, it is also realistic to say that a 30-credit master thesis unavoidably has its limitations in terms of scope and impact. Also, as a master student having limited field experience is also a limitation. Therefore, the personal and more achievable aim driving this study has been to gain further knowledge of qualitative methods, experience with in-depth interviews, and laying the foundations for

future ESD research. From the outset of this research, the author's passion to explore how education practitioners can be better supported to implement ESD has been a driving force. The choice to take a holistic perspective to researching ESD was also driven from the authors own first-hand experience of the effectiveness of a holistically integrated approach to implementing ESD. While an academic understanding was not fully formed before this research study commenced, when the WIA to ESD was introduced, a clear affinity to the approach and its theoretical stance was affirmed. Therefore, throughout the thesis a conscious effort is made to attempt to pare back the author's own preconceptions and biases in order to ensure other perspectives were not discounted. This meant consciously challenging the author's bias and not declare a holistic approach to ESD as the only answer. Moreover, the authors professional background, working with implementing ESD[14], can be seen as a limitation in terms of bias. However, it can also be viewed as meaning there is substantial awareness and understanding of SD that is relevant for this field of study. Therefore, the study also strives to use this as a strength in order to combat the limited field experience.

Another limitation has been the Norwegian language. Whilst competent in understanding both written and oral Norwegian, the author is not fluent. It has been an extra step to translate the *ESD in Practice* data sources and relevant academic articles into English, and to gauge the extent to which this is needed. The authors capabilities have been tested and whilst confident in the results, the fact that the author is English, not Norwegian, is a limiting factor resulting in potential nuances lost in translation.

[14] The author's has 13 years practice-based experience in ESD related fields throughout Europe, including contributing to European policy (Council of Europe) and various education based NGOs. Prior to this, sustainability issues have been a subject dominating previous studies, including a BA (hons) in Photography.

Chapter Four: Education for Sustainable Development selected policy and academic literature - Analytical Framework for thesis

Chapter four details selected ESD policy and academic perspectives. Particular focus is given to policy and academic understandings of ESD and WIA that are utilised in the thesis analytical framework. First, 4.1 defines what a 'sustainable school' means in terms of this thesis. 4.2 (figure 4) provides a conceptual map, a visual overview of the main academic and policy perspectives employed in this thesis. 4.3 then introduces selected ESD policy, and 4.4 introduces the selected ESD academic literature. 4.5 presents the analytical framework, and lastly, 4.6 presents the analytical framework, alongside the corresponding thematic analysis themes.

4.1. What is a sustainable school?

Four examples of ESD-practices in schools from India, UK, Germany, and Canada are utilised to explore what being a sustainable school means. To start, a brief summary of why ESD research and policy is requiring schools to go beyond single-subject teaching of ESD is given:

Wals (2015) describes how ESD advocates often view traditional discipline-based forms of learning as incompatible for implementing ESD as single subject pedagogies, "…the one way transfer of knowledge from a 'more knowledgeable other' or sender to a more or less passive receiver are insufficient and even inappropriate for dealing with sustainability challenges…" (Wals, 2015, p. 89). Instead interdisciplinarity and collaboration between teachers and communities is called for in ESD, and while each discipline has its role and can contribute in varying ways (UNESCO, 2005, as cited in Wals, 2012), it is approaches that promote collaboration and exchange between multiple disciplines and actors, that are highlighted as effective ways to implement ESD. In terms of becoming a sustainable school,

this asks for schools to not only collaborate and view ESD holistically within the school grounds, and each individual subject, but to also involve and relate ESD-practices to the wider community in a meaningful and contextually appropriate way.

A Swedish research study (Borg, Gericke, Höglund & Bergman, 2014), shows that whilst teachers can grasp the three pillars of sustainability (social, economic and environmental), there is not a strong understanding of sustainable development's holistic nature; resulting in 70% of the 3229 teachers questioned in the study expressing the need for SD training. Borg et al., (2014) suggest a potential way to advance ESD in Sweden would be for the three pillars of sustainability to be articulated in Sweden's Education Act and exam goals.

When ESD is traced historically (Appendix 3) there are great variations between what ESD actually entails and its objectives (Wals & Benavot, 2017). For example, Environmental Education (EE) in the 60's/70's focused on targeting individual environmental behaviours in order to engage societal support for new environmental legislations. Whereas today, in Environmental and Sustainability Education (ESE), the aim is to develop ways in which sustainable living, and the values attached, become the default values in which societies are built upon (Wals & Benavot, 2017). A table originally published in Wals & Benavot, 2017, describes the approaches changing in four waves since the late 19th century (Appendix 3). When viewing ESD historically it is evident that the understanding of what ESD stands for has been, and to some extent still is, in constant flux. Therefore it is clear why education institutions worldwide struggle with its implementation. So, when researching ESD, both in terms of its history and its future advancement, a manifold of what does and does not result in delivering ESD's current objectives are found. Definitions and capabilities vary from country to country and school to school. It is clear that the approach possible in one setting will not be

applicable to another. Therefore, attempting to summarise what an 'ideal' approach to ESD is, or what an ideal 'school', in terms of contributing to sustainable future practices, is both subjective and unique to each societal setting. That said, it is also paramount to know what is not working currently and what outcome/endpoint we are reaching towards, hence, the need for defining what a sustainable school actually means. So, in order to arrive at a sustainable school definition for this thesis context, four examples of ESD-practices are now presented.

One central aspect to creating a sustainable school is the idea that change needs to be driven from a student led, bottom-up approach. Research shows facilitating this type of learner-led actions in schools, as a form of implementing ESD, is effective. For example, take the issue of food waste presenting the opportunity for student led campaigns to result in tangible sustainability transformations: A case study in India (Leicht et al., 2018) reported a 50% reduction in food waste in a school's canteen due to learner-led actions that came about as a direct result of students identifying SD-orientated issues within their school, thus formulating and executing an action plan to fix the said issue. This learner-led action model is also known as a core part of what defines the International Eco-Schools Green Flag initiative, whereby schools worldwide embrace an eco-certification seven step process as a way to empower students to identify and initiate change in their own schools and community. An ESD case study publication for UNESCO (2017b) by the UK UNESCO National Commission, showcases the Eco-Schools initiative in the UK. The report mentions several positive impacts measured in Ec0-School member schools, including cognitive development and wellbeing improvements, and the schools involved are proportionately reported as high performing in independent school inspections (UNESCO, 2017b). Moreover this eco-committee model is reported as empowering students to challenge the status quo, allowing for the development of the attributes recognised as necessary to support children in

becoming active citizens (UNESCO, 2017b). A succinct summary as to what Eco-Schools stands for is given in Wals (2012) DESD report:

> Ultimately, Eco-Schools are a process that become a way of life, a cultural paradigm for school administrators to master through delegation and a belief in their teachers' and students' capacity to change the school from the ground up (source CS, ECO-schools, FEE) (p. 72)

Examples of what being a Sustainable School entails can also be found in Schreiber and Siege (2016) *Curriculum Framework for ESD*, for example in chapter 5 (Mathar, 2016) gives various examples of ESD-practices that embrace a WIA, and summarises what the WIA entails: "The development of a "whole school" as a school which integrates sustainable development on all levels, requires – apart from the curricular implementation of [...] ESD - the advancement of school as an organisation" (Mathar, 2016, p. 401).

A holistic approach to sustainability in schools, such as the WIA described above, observes an educational knowledge exchange being transferred into action. Specifying the WIA to ESD as going beyond curriculum implementation helps to distinguish what being a sustainable school entails for this thesis. One of the case studies Mathar (2016) presents in connection to the WIA is a Berlin based school, one of the first to be awarded a national Fair-School (Faire Schule) Prize in 2013; a scheme developed by the Centre for Global Learning in Berlin, with democracy, ecological responsibility and global learning at the core of the concept. Like the Green flag Eco-school's initiative, the Fair-School is a national network that awards schools with recognition when all three of the above concepts are worked with at the school. The Fair-School scheme offers guidelines in which to work with these concepts whilst also acting as a bridge to connect together local German based schools and also make connections with the wider UNESCO international school's community - the Associated Schools Project network (ASPnet) (Mathar, 2016). This type of initiative, that

enable schools to work on an individual action plan, whilst also connecting to a wider network, allows for an understanding of what sustainability means globally, and locally, to take place. This can also assist in defining what a sustainable school means, especially in terms of what type of external actors and/or community related projects are beneficial for a school to connect to.

Lastly, numerous ESD case studies and approaches to encourage schools to implement ESD can also be found within ASPnet[15] and their own initiatives. The ASPnet includes member schools from over 180 countries around the world, representing the involvement of 10,000 schools. ASPnet is "committed to promote UNESCO's ideals of peace, international understanding, intercultural dialogue and sustainable development…" (UNESCO, 2016, p. 4). ASPnet is another example of a global network, like Eco-schools, that mission includes promoting ESD. For example, in 2016-2018 an ASPnet initiative, involving 250 of their network schools, piloted a whole school action plan approach concerning ESD (ASPnet. 2019). This initiative, titled *Getting Climate Ready: a guide for schools on climate action and the whole school approach*, offered a step by step guide set up to enable schools to take measures to "reduce climate change in every aspect of the school" (UNESCO. 2016, p. 3). A recent report by Chopin, Hargis & McKenzie (2018), evaluated the impact of this ASPnet initiative by employing the whole-school approach as a lens, similarly to how this research study employs the WIA[16] within the analytical framework. Chopin et al., (2018) evaluated 10 Canadian schools that took part in the Getting Climate Ready initiative, alongside data collected from 17 non participating ASPnet schools. Examples of approaches trialed in this pilot included; implementing ESD in all subjects; organising carbon neutral whole-school

[15] Up to date information from ASPnet (2019) can be found at https://aspnet.unesco.org/en-us/climate-education-education

[16] ESD academic literature also refers to this as A Whole School Approach, but for this thesis the acronym WIA is used.

action days; climate action through facilities and operation initiatives; and student led climate change committees (Chopin et al., 2018). The findings, included the identification of drivers and barriers concerning implementing climate action at the schools', concluding, for example, "that knowledge of climate change and climate change education are typically not sufficient for realising a whole school approach to climate change education" (Chopin et al., 2018. p. 26). Also highlighted were five 'promising practices' that linked to the four WIA domains identified by ASPnet; School governance; Teaching and Learning; Facilities and operations; and Community partnerships (Chopin et al., 2018). The 'promising practices' are summarised as; the merit of school networking and the exchange of ideas and knowledge through the ASPnet collaborative network; the diversity of participants seen in the initiatives including teachers, management staff and a wide age range of students; witnessing climate change becoming a more tangible topic when given a local context; successes in employing technology to explore climate change; and lastly the ability to make complex climate change concepts accessible by linking them to concrete, feasible actions Chopin et al., 2018).

Taking into consideration, and borrowing from the aforementioned case studies, a sustainable school can be defined as: *A school that is committed to transitioning towards sustainability, where ESD is present in all aspects of the school; what they teach, practice and how they function. A school where ESD is learner led, inspiring students themselves, with the relevant support, to identify and implement change within the school system and surrounding community. Being a sustainable school means a commitment to engaging with the wider sustainability global agenda, while also committing to identifying and implementing feasible and concrete local sustainability transformations.*

This section and the studies[17] mentioned highlight how important it is to minimise the gap between, identifying the need for ESD to be part of a schools remit, and schools actually having the capacity, knowledge, and therefore the ability to implement ESD. The case studies presented also provide insight into why ESD is calling for holistic approaches, such as WIA, to effectively implement ESD.

4.2. Thesis concept map. A visual overview of academic and policy perspectives employed in this thesis

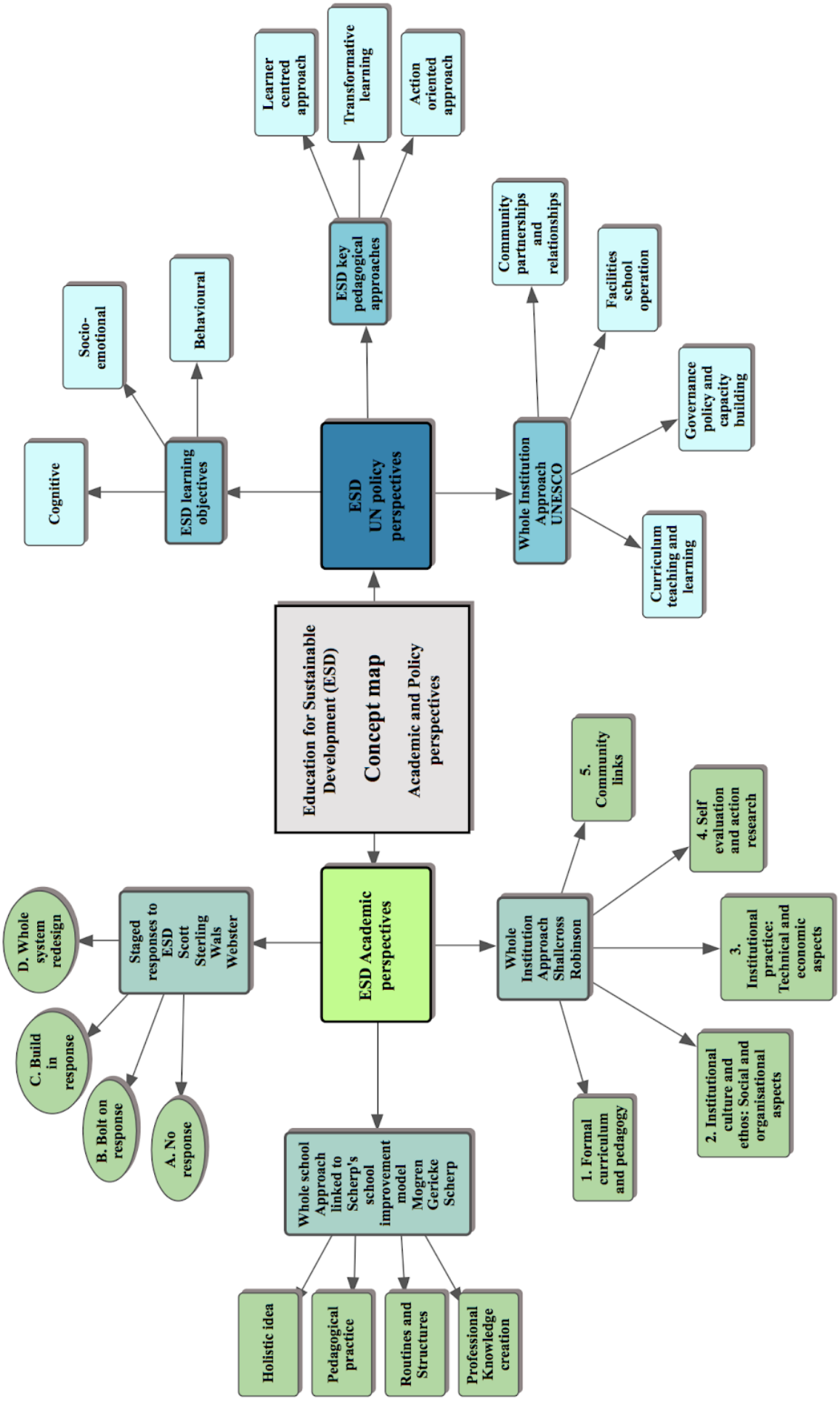
Figure 4 visualises the interconnection between the ESD academic and policy perspectives selected for this thesis. It also provides a structure for mapping out the remaining sections in Chapter four.

[17] to summarise: Borg et al., 2014; Hargreaves, 2008; Leicht et al., 2018; UNESCO., 2017b; Mathar, 2016; Chopin, Hargis & McKenzie, 2018; Wlas 2015; Wals & Benavot 2017; Leicht et al., 2018; UNESCO 2017b;.

Figure 4

Thesis Concept-map - Selected ESD Academic and Policy perspectives

Note: **Concept-map Copyright Rosalie Mathie, 2018**


Education for Sustainable Development (ESD)
Concept map
Academic and Policy perspectives
ESD UN policy perspectives
ESD Academic perspectives
ESD learning objectives
Cognitive
Socio-emotional
Behavioural
ESD key pedagogical approaches
Learner centred approach
Transformative learning
Action oriented approach
Whole Institution Approach UNESCO
Community partnerships and relationships
Facilities school operation
Governance policy and capacity building
Curriculum teaching and learning
Staged responses to ESD Scott Sterling Wals Webster
D. Whole system redesign
C. Build in response
B. Bolt on response
A. No response
Whole Institution Approach Shallcross Robinson
5. Community links
4. Self evaluation and action research
3. Institutional practice: Technical and economic aspects
2. Institutional culture and ethos: Social and organisational aspects
1. Formal curriculum and pedagogy
Whole school Approach linked to Scherp's school improvement model Mogren Gericke Scherp
Holistic idea
Pedagogical practice
Routines and Structures
Professional Knowledge creation

4.3. United Nations policy perspectives of ESD

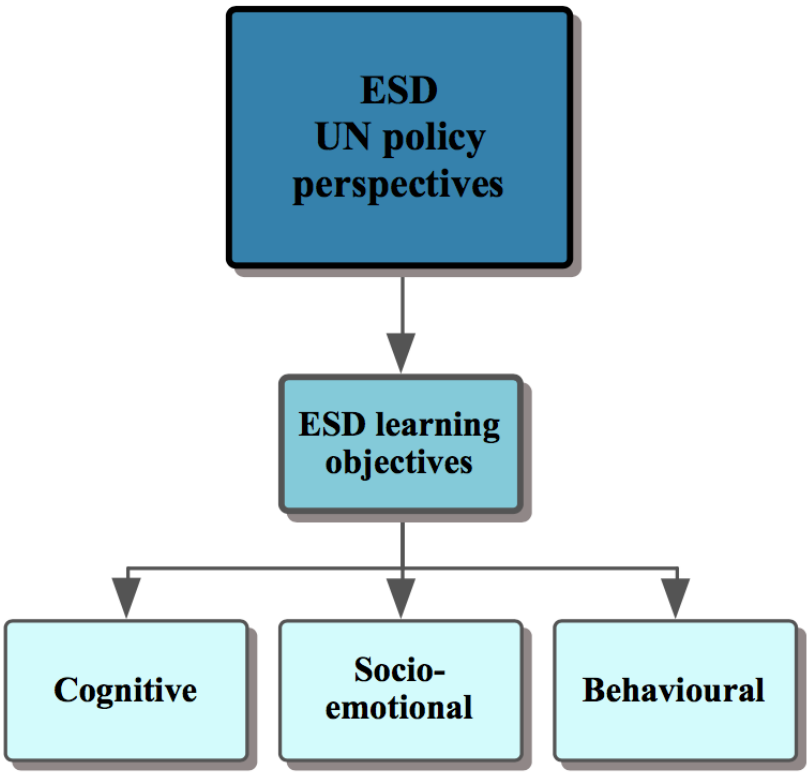
In this section, three elements of ESD are selected to help understand what ESD means in terms of global policy. First the ESD learning objectives are presented, second, the ESD key pedagogical approaches, and lastly, the ESD policy perspective of the WIA.

4.3.1. Education for Sustainable Development learning objectives

ESD, in relation to the SDGs, promotes education as a stand-alone goal and as a key enabler to achieve several of the other SDGs (UN, 2016). A central ESD policy-based definition is found in a publication that places ESD within the SDG 2030 agenda (UNESCO. 2017a). ESD is recognised by UNESCO (2017a) as a way to empower "learners to take informed decisions and responsible actions for environmental integrity and economic viability and a just society for present and future generations" (p. 7); thus, enabling learners, in both the formal and non-formal sense, to have a 'voice' and influence decision making in various arenas is vital to ESD. UNESCO (2017a) apply ESD learning objectives (Figure 5) to all of the SDGs, which in turn details how ESD can be employed for supporting each SDG. Whilst ESD objectives exist independently and pre-date the SDG 2030 agenda, it was decided that utilising this up-to-date application of ESD was relevant as it is clear these objectives represent how ESD is and will continue to be monitored and evaluated by UNESCO.

Figure 5

Concept-map detail - UNESCO – ESD Learning Objectives



Note: **Concept Copyright UNESCO, 2017a. Concept-map Copyright Rosalie Mathie, 2018**

The three ESD learning objectives are further described as:

> The cognitive domain comprises knowledge and thinking skills necessary to better understand the SDG and the challenges in achieving it: The socio-emotional domain includes social skills that enable learners to collaborate, negotiate and communicate to promote the SDGs as well as self/reflection skills, values, attitudes and motivations that enable learners to develop themselves: The behavioural domain describes action competencies (UNESCO, 2017a. p. 11)

Each SDG is appointed five further learning objectives within each domain, in turn these relate to specific learning outcomes appointed to all the SDGs (UNESCO 2017a). This level of detail regarding the employment of ESD through these cognitive, socio-emotional and

behavioural domains allows the reader to understand how ESD can result in the subsequent learning outcomes, thus enabling the learner to grasp how "…to deal with the particular challenges of each SDG" (UNESCO, 2017, p. 58).

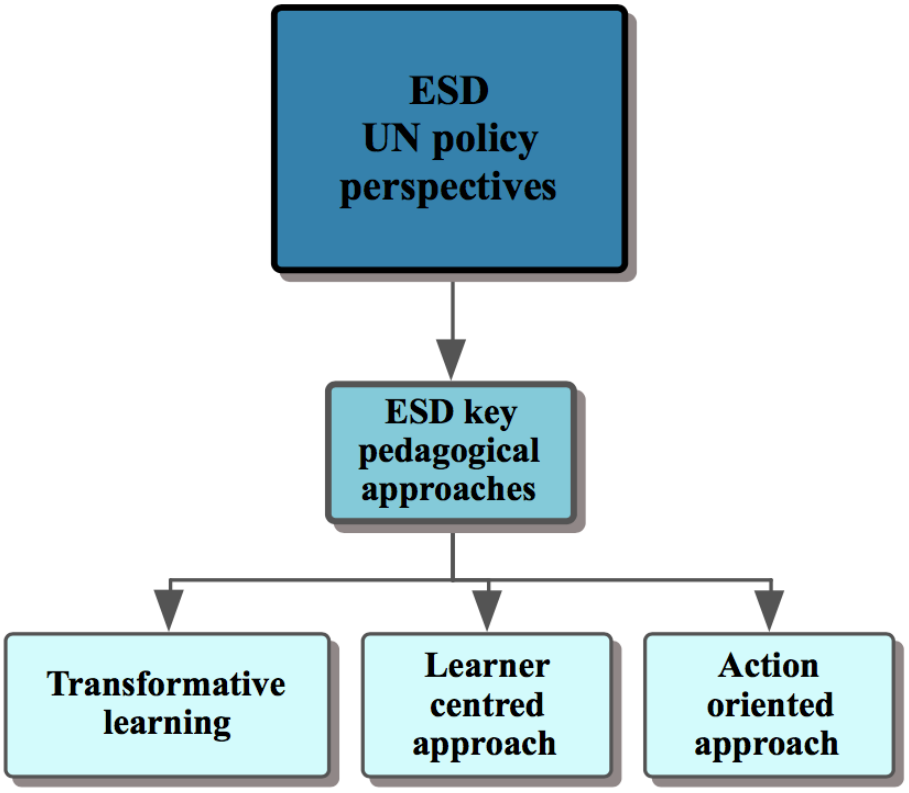
There is an established need for assessment, monitoring and evaluation methods to advance, in particular to develop ESD learning objective indicators to ensure the quality and level of impact of ESD is measured (UNESCO, 2017a). UNESCO (2017a) emphasise that assessing ESD learning objectives requires a combination of both traditional and more reflective methods and mention "reflexive engagement with ESD as an emerging educational reorientation process" (p. 57). This need for reflexivity is in part due to the types of pedagogical approaches (presented in the next section) promoted to facilitate ESD also requiring reflexive teaching approaches.

4.3.2. Education for Sustainable Development key pedagogical approaches

The three overarching pedagogical approaches (Figure 6) explain further how ESD can support the SDGs, they are; action-orientated learning; transformative learning; and the learner centred approach (UNESCO 2017a).

Figure 6

Concept-map detail - UNESCO key pedagogical approaches



Note: **Concept copyright UNESCO 2017a. Concept-map Copyright Rosalie Mathie, 2018**

ESD policy calls for alternate pedagogical approaches; "in order to deliver such diverse and evolving issues, ESD uses innovative pedagogy, encouraging learning in an interactive, learner-centred way that enable exploratory, action orientated and transformative learning" (Leicht et al., 2018, p. 7). UNESCO (2017a) describe a learner centred approach as including the learner's own prior knowledge and experiences in the learning process; utilising this as a form of discovery and way in which the learner's own self-reflection is ensured, meaning they themselves are part of constructing their own knowledge. Central to this approach is to "…change the role of the educator to one of being a facilitator of learning processes (instead

of being an expert who only transfers structured knowledge) (Barth, 2015)" (UNESCO, 2017a, p. 55). Transformative learning is described by UNESCO (2017a) by citing the work of Slavich and Zimbardo (2012) and Mesirow (2000), who define the educators role as a facilitator, who assists the learner in questioning their own worldviews in order to both challenge, empower and deepen their own perceptions and knowledge of the world. This approach is essentially about questioning the status quo, which UNESCO (2017a) also cite in terms of transgressive learning (Lotz-Sisitka et al., 2015); that by questioning one's own understanding of the world ESD can "prepare the learner for disruptive thinking and the co-creation of new knowledge" (as cited in UNESCO, 2017a, p. 55). Action-oriented learning is described by UNESCO (2017a) referring both to Kolb's (1984) action learning theory and by specifying the role of the educator to create a learning environment that promotes the learner to be reflexive in their experiences, learning processes and own development. Action learning as Kolb (1984) presents, has 4 stages: "1. Having a concrete experience, 2. Observing and reflecting, 3. Forming abstract concepts for generalization and 4. Applying them in new situations" (Kolb, 1984 as cited in UNESCO, 2017a, p. 55).

It is clear these three pedagogical approaches are interlinked both in their approach and in their outcomes, with different, and often multiple aspects written about in terms of each SDG (UNESCO, 2017a). It is beneficial to mention the other concepts promoted within these three pedagogical approaches, whilst they are not directly included in the analytical framework for this thesis, they are inextricably linked to understanding ESD policy. For example, key competencies for sustainability mentioned in relation to the learning objectives for achieving the SDGs include; Systems thinking competency; Anticipatory competency, Normative competency; Strategic competency; Collaboration competency; Critical thinking competency; Self-awareness competency & Integrated problem-solving competency

(UNESCO, 2017a). Also, three central learning outcomes needed for fostering these SD competencies promoted in other ESD policy reports are; collaborative decision-making, critical and systemic thinking, and taking responsibility for present and future generations (Leicht et al., 2018; UNESCO, 2014). As the various competencies and suggested learning outcomes suggest, there is a complexity to this that is beyond the scope of this thesis, however these key pedagogical approaches are included in the analytical framework as they connect to the ESD learning objectives and key concepts found in ESD academic literature (section 4.4).

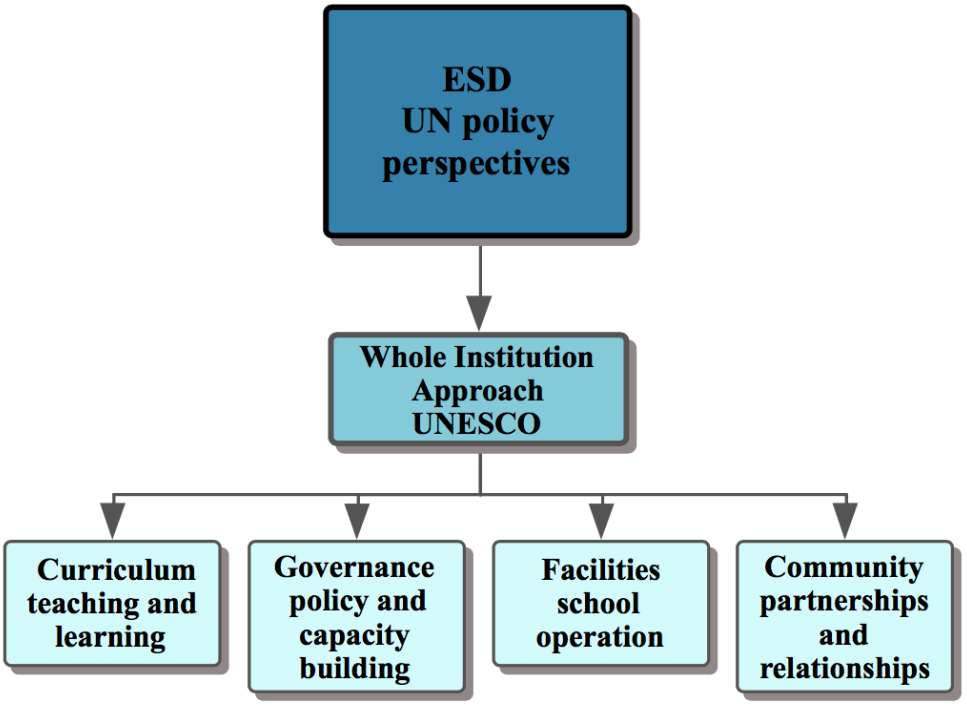
As mentioned in terms of the ESD learning objectives these alternate/key pedagogical approaches also require existing assessment systems to incorporate more innovative assessment methods "it is crucial that the methods used to assess ESD extend beyond verifying knowledge of facts to also assess learners' competencies" (p. 53). With this comes various challenges and debates asking educators to question how and why assessment is used and "[...] to move beyond the exclusive use of assessment of learning to forms of assessment for learning and assessment as learning" (Leicht et al., 2018, p. 54). Subsequently, the approaches and competencies introduced in this section also allude to why a holistic method like the WIA is promoted.

4.3.3. The Whole Institution Approach (global policy perspective)

The next section defines WIA from an ESD policy perspective. In terms of ESD policy there are four overarching elements that represent the main aspects of the WIA (Figure 7), all of which represent key areas to be addressed in order for an education institution to be transformed sustainably as a whole (UNESCO 2017a).

Figure 7

Concept-map detail - UNESCO perspective of the Whole Institution Approach

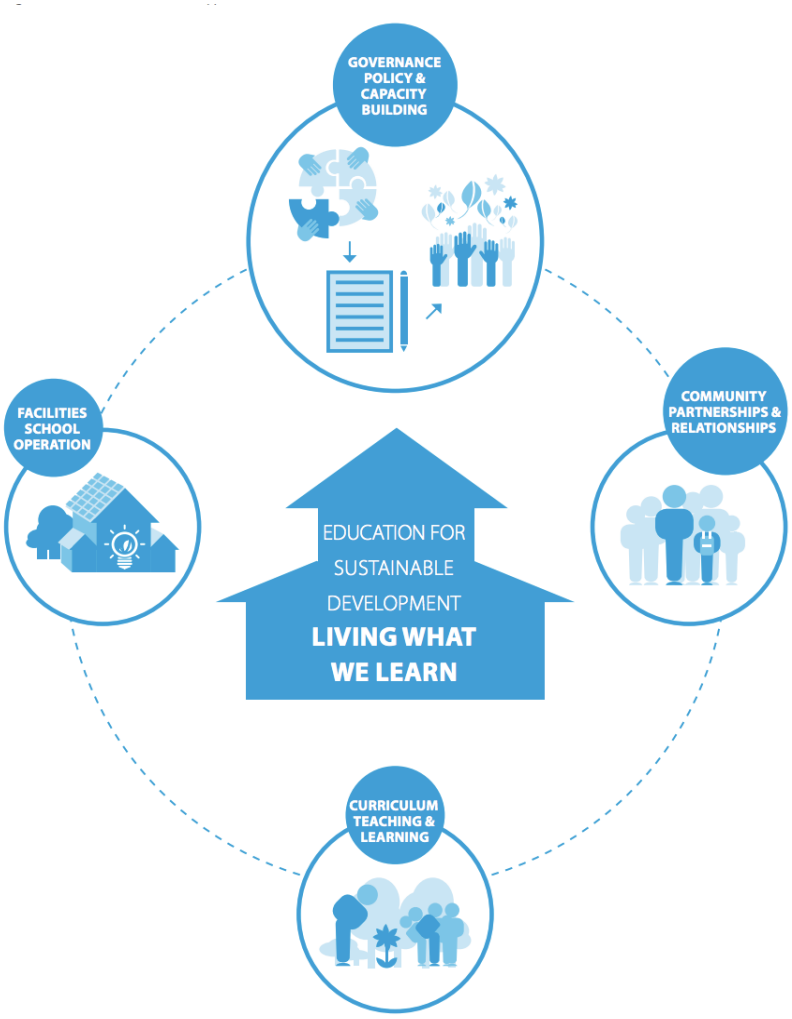


Note: **Concept Copyright UNESCO, 2017a. Concept-map Copyright Rosalie Mathie, 2018**

UNESCO (2014; 2017) also refer to these 4 elements visually in their own graphic (Figure 8) and utilise this model in various ways. For example, the aforementioned ASPnet WIA pilot project Getting Climate ready (UNESCO, 2016; Chopin et al., 2018), bases the projects scope and content on the WIA, calling for Climate Action to take place in all four WIA areas, abbreviate the titles to; Teaching and learning; Facilities and operations; Community partnerships; and School governance.

Figure 8

UNESCO Whole Institution Approach - living what we learn



Note: **Copyright UNESCO 2014, p. 89; 2017a, p. 53**

UNESCO (2017a) promote the WIA as an approach that can foster a critical form of learning that ensures ESD is not just taught but also practiced in the everyday existence of the education institution. Also emphasised in UNESCO's (2017a) account of the WIA is how it can assist in the following; bringing together all stakeholders representing the whole education institution in order to collectively implement ESD; ensuring relevant training, technical and financial report are considered in terms of reorientation; and the promotion of

developing networks, including peer to peer support in order for the approach to be promoted with the idea of scalability in mind (UNESCO, 2017a). UNESCO (2017a) also identify that school leaders and management play a vital role in implementing ESD, and the WIA provide a means for this type of holistic engagement, involving multiple actors to take place. Whilst ESD policy (UNESCO, 2017a) recognise all elements of the WIA as important, it is the elements that relate to action oriented transformative pedagogy that are highlighted : "Interactive, integrative and critical forms of learning [are singled out as they] are at the core of delivering ESD [...] making this approach [WIA] an action-oriented transformative pedagogy" (Leicht et al., 2018, p. 48).

4.4. Academic perspectives of Education for Sustainable Development

Selected literature examining ESD-practice in schools and academic perspectives of the WIA are presented in this section. Albeit in different ways, all the literature presented offers methods and/or rationale for evaluating ESD-practices using a WIA lens. First, section 4.4.1. explores a staged response to ESD. Then in section 4.4.2 and 4.4.3 presents literature selected for this study's analytical framework. The majority of literature presented is based upon European research studies, thus comparable to the Norwegian formal curriculum system. While the WIA lens is not yet prevalent in Norwegian based education research, seeing this approach utilised in comparable education curriculums and subsequent studies across Europe offers a rationale for employing a WIA lens in this Norwegian based thesis.

4.4.1. Staged responses to ESD

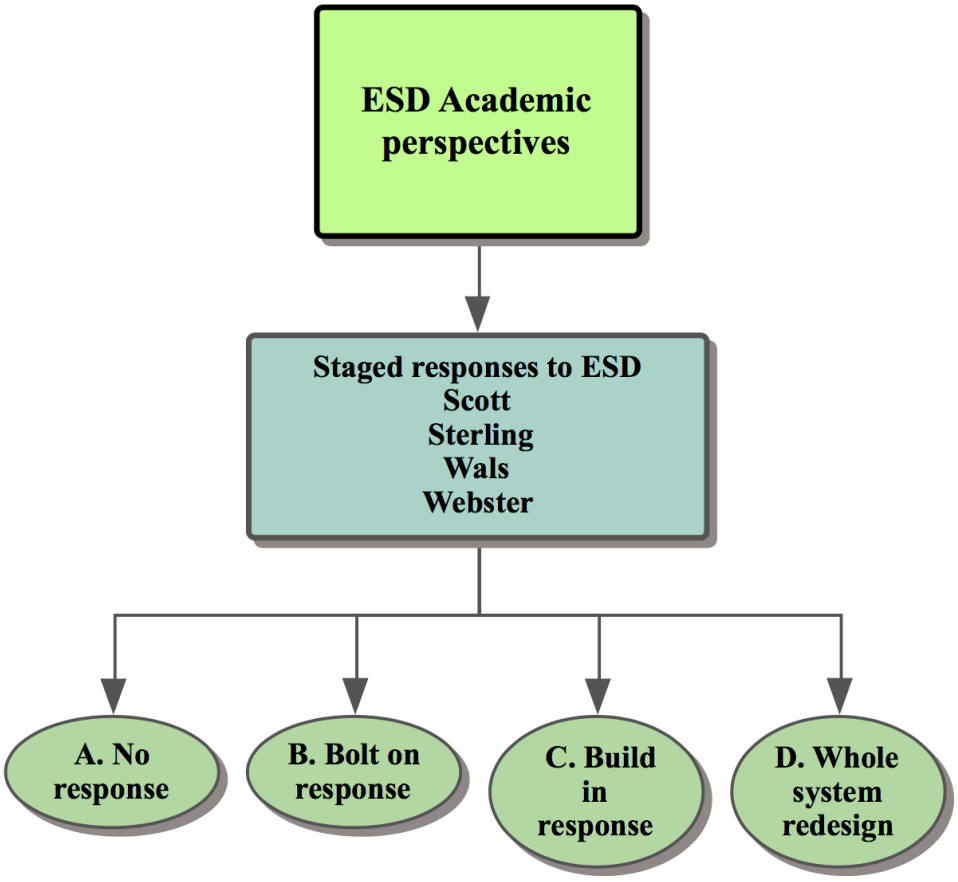
The concept of four staged responses (Figure 9) to sustainability challenges is traced back to Sterling, (2004). Sterling's (2004) outline of the four stages responding to SD, it is summerised by Stott (2015) as:

> a. null- no response needed b. bolts on – adding to what is done at the margins, c. build in – integrating, more centrally, into what is done currently, d. whole system re-design changing what is done to create a new system based on different principles (Scott, 2015 p. 61).

The stages can be applied to any institution system or national entity, for example a government structure or other national based organisations (Scott, 2015). However, as this thesis focuses on ESD, when referencing this concept, a staged response to ESD, is used instead of staged responses to sustainability challenges.

Figure 9

Concept map detail – A Staged Response to ESD



Note: **The staged response concept features in multiple publications; Scott, 2013; Sterling, 2004; Wals, 2012; and Webster (2004). Concept-map Copyright Rosalie Mathie, 2018**

In the DESD's full length report, Wals (2012) identifies that at the start of the DESD, ESD was often perceived as a 'bolt on' topic. DESD analysis showed a shift in re-thinking what ESD stood for, with ESD more and more recognised as an approach not a topic, with this shift built in and system redesign approaches to ESD started becoming preferable (Wals, 2012). Webster and Johnson (2009) also refer to four stages concerning the process for sustainable schools and colleges; stage 1 - Exploratory; stage 2 - Assimilating; stage 3 - Strategie; and

stage 4 - Evolved to 'eco-restorative. Webster and Johnson (2009) detail stages relating to curriculum, campus and community (Figure 10).

Figure 10

Sustainable schools and colleges - not yet! Stories around four stages

	Curriculum	Campus	Community
Stage 1 **Exploratory** Small scale enthusiast led activities 'I care, at least!'	'Bolt-on' class activities. Protect Nature. Basic science of issues and mostly 'personal' choices and actions about 'solutions'	'Do your individual bit', recycling, litter picking. Personal eco-footprint	Will you contribute? Can we help? One off community projects
Stage 2 **Assimilating** 'We probably should folks..'	Assumes 'business as usual but greener and fairer'. Social and economic aspects of big picture questions common and challenging	Management of day-to-day spending choices e.g. purchasing, energy. School eco footprint (audit). 3Rs re school goods procurement	School as a community resource, higher profile for environmental and sustainability aspects - school gardens with community involvement etc
Stage 3 **Strategic** 'We know why we will...'	A focus on the roles of business and government as well as the personal. Much interest in 'possible futures' and critical thinking across subjects. Dialogue on meeting new business skills and 'green collar' jobs e.g. design for disassembly, 'systems thinking' .	Capital investment. Building as pedagogy. 60% + energy and materials saving. Strategic approach to school travel, water management etc. 'Closed loops' thinking emerges re purchase of goods and services	School as customer and supplier in local community/economy (energy, waste treatment, food?)
Stage 4 **Evolved to 'eco-restorative'** 'We were not immune from the big changes...'	'Systems thinking' a preferred worldview with educators and learners when designing 3Cs programmes. Learning how to learn main activity with content and skills integrated -very personalised? School/college staff share learning facilitation roles with other community stakeholders. Internet learning important.	Re-investment. School concept reshaped by low carbon economy More localisation – network school? Eco-Restorative school based on 'closed loops' model? Rethinking of learning spaces	School/community boundary becomes fuzzy. Local community as work, knowledge and skills providers in relation to SD agenda

Note: **Copyright Webster & Johnson, 2009, p. 124**

Similar to Webster and Johnson (2009), Scott (2013) outlines the four stages in terms of school application: Stage one whereby stand alone projects exist with a coordinator in place, but not overly supported by school leaders. In stage two school leaders are supportive and accept the need for sustainability to be embedded into the curriculum, promoting community engagement connected to the campus which is supported with active leadership bringing together various actors into the process. Stage three encompasses new ways of approaching the curriculum; for example school budgets are discussed, there is further exchange between community and school with direct action to reduce the schools own impact, e.g. carbon emissions. In stage four probably[18] the curriculum and the idea of what a school stands for changes, for example, "…the school buildings and campus are probably eco-restorative in that they contribute to social, cultural and natural capital stocks" (Scott, 2013, p. 186). Scott (2013) details these stages not as a static set of requirements, but more as a collection of developmental stages that would inevitably be approached and navigated in various ways.

Scott (2015) reasons why executing stages three and four on a school level also depends on a transformative response to SD happening on societal and governmental levels. For example, Scott (2015) alludes to why it matters which concepts/words are chosen for ESD policy, such as 'whole-system engagement' or 'whole-system redesign'. Without having space to fully discuss semantics and meaning making regarding these terms, it is important to remember what features in ESD policy, and the corresponding level to which ESD and SD related transformations then take place, limit what ESD can achieve at an institutional level.

Also of note is that the fourth stage, whole system redesign, is described by Scott (2013; 2015) as a stage that has not yet been achieved in any country. However, visions of what this fourth stage (and third) could look like are illustrated clearly in a Webster and

[18] Scott (2013) uses the words 'probably' and 'perhaps' to emphasise the fact that there are no examples of this stage currently

Johnson (2009) illustration (Appendix 6). As Wals (2012) mentions, even with a desire to move away from the 'bolt-on' response, many education institutions find a holistic approach challenging, and therefore the idea of a whole system redesign is far from reality. This is reiterated in Wals and Benavot (2017), with international research papers referenced that reported SD related projects[19] as predominantly bolt-on or stand alone in nature. This indicates that difficulties for Schools to move beyond this 'bolt-on' stage is a shared global issue.

Lastly, when Scott (2015) discusses the latter stages being dependent on transformations simultaneously taking place at institutional, system and national levels, he proposes the WIA as an approach equipped to inspire these transformations to take place on all levels, within the school and beyond. However, Scott (2015) also reiterates a single school has limited scope to implement a WIA unless national systems, such as national examinations, are reformed (Scott, 2015). So, one could say transformations at all levels are in some form interdependent. This reliance reiterates why WIA, where all actors have a voice and a role to play, is promoted both for ESD and in turn the SDG 2030 agenda.

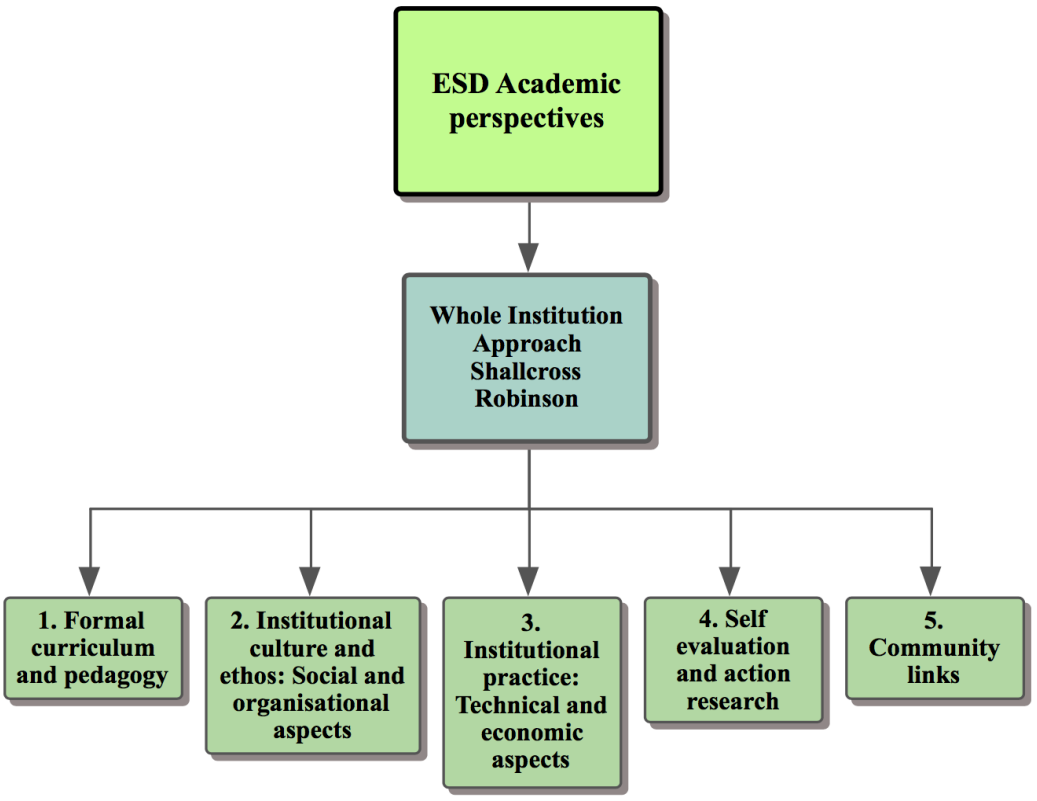
4.4.2. The Whole Institution Approach (academic perspective)

While similar to the WIA ESD policy definition, some mechanisms are emphasised more from an academic perspective. In Shallcross (2003; 2005) version, self-evaluation and action research are emphasised as a stand-alone fifth WIA strand (Figure 11), whereas the UNESCO policy version (Figure 8) details four. Whilst a role for research and evaluation is addressed in WIA policy (UNESCO 2017a,), it is not emphasised as much as other WIA elements/strands.

[19] At primary, secondary and university level

Figure 11

Concept-map detail – Academic perspective of the Whole Institution Approach



Note: **Concept Copyright Shallcross 2003, 2005; Shallcross & Robinson 2008.**
Concept-map Copyright Rosalie Mathie, 2018

Literature connected to Shallcross's WIA knowledge forms the main WIA academic source selected for this thesis. Due to the limited thesis scope only a small selection[20] of Shallcross's literature is presented here. An aim in terms of future research is for the information gathered from the preliminary WIA literature review to be considered when embarking on additional ESD-practice research. In particular Shallcross's call for self-reflection, visual methods and

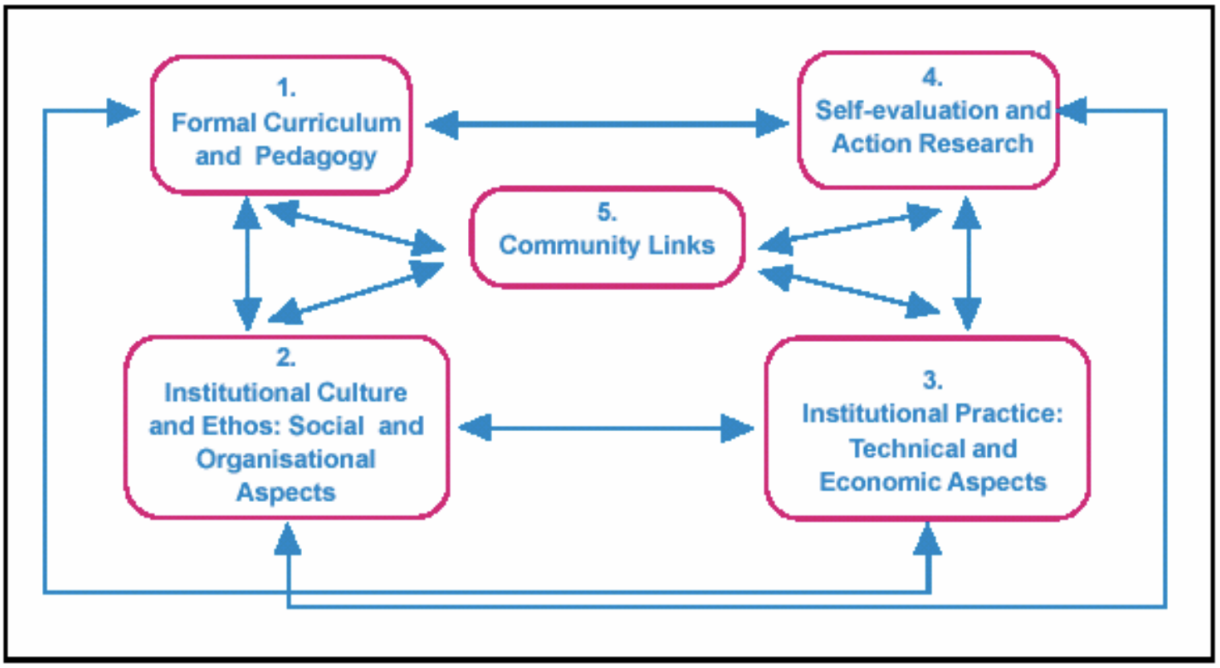
[20] The work of Tony Shallcross and his colleague John Robinson is chosen as the main source of reference due to their extensive involvement in Sustainability Education research and teaching material formation in Europe spanning the past 20 years. Elements directly influencing the thesis interview guide and analytical framework are presented in this section, however, publications originally part of this literature review include; A full account of the 2018 interview with Shallcross, the Continued Professional Development (CPD) based project funded by the European Union Comenius programme, titled; Sustainability in European Primary Schools (SEEPS) project 1996-2004 (Shallcross, 2005) and the SEEPS teaching material trial[#] (Shallcross, 2004).

action research to be utilised as a central tool for both practitioners and researchers to utilise for advancing ESD. With this in mind the interview guide for an interview[21] with Shallcross (T. Shallcross, personal communication, Jan 27, 2018), conducted as part of preliminary WIA research, is presented in Appendix 7, with information from this interview referenced in this section where appropriate.

Figure 12 visualises various interconnections between the five strands in Shallcross's WIA model, illustrating that each aspect of how a school is organised is interrelated and therefore impact one another.

Figure 12

The Five Strands of a Whole-School Approach



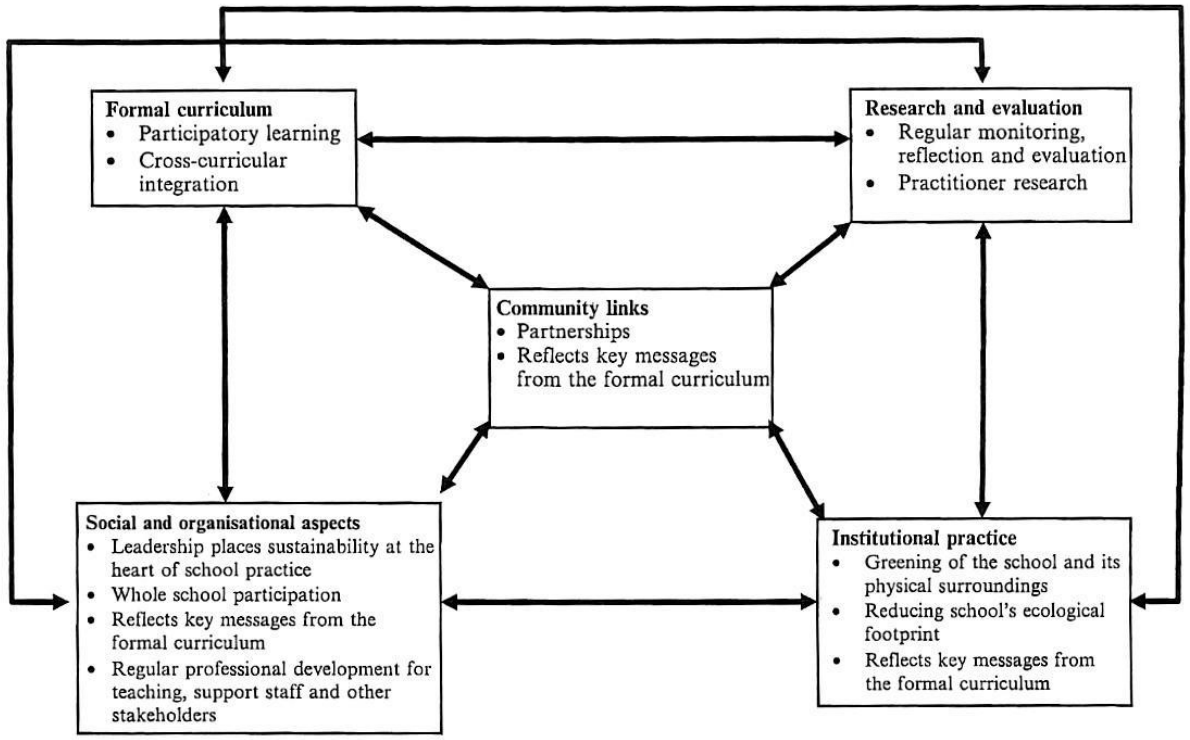
Note: **Copyright Shallcross 2003, p. 112; 2005, p. 4**

[21] Some of Shallcross's viewpoints communicated in this interview, in particular concerning future considerations for the WIA and ESD are referenced directly, however due to the limited thesis scope this WIA background information has been condensed.

Each of the five strands have numerous characteristics, an overview of which is found in Shallcross and Robinson's (2008) later publication of the WIA five strand model (Figure 13).

Figure 13

A model of whole school approach with some characteristic features



Note: **Copyright Shallcross & Robinson, 2008, p. 301**

Shallcross (T. Shallcross, personal communication, Jan 27, 2018) strongly expressed that the lack of research, monitoring and evaluation methods in today's ESD implementation is holding back ESD's advancement. Research and evaluation is purposefully appointed as a separate and stand alone WIA strand by Shallcross. Therefore a distinction is made between WIA policy and theory definitions, with WIA theory singling out research and evaluation out as an essential and under-prioritised component of the WIA.

This emphasis on research and evaluation can be traced back to Shallcross's (2003) description of WIA requirements:

> [...] implementing a whole school approach requires the monitoring of the curricular, social and institutional practices in schools and their links with community. Are these in current thinking and the current context and within the resources available locally the best solutions? Is the curriculum providing the knowledge that pupils need to live sustainable lifestyles? Can the school act as a research base to find out about environmental justice in the school and its local community? And perhaps most importantly of all is the school acting appropriately on this knowledge base? (Shallcross, 2003, p. 112)

Shallcross (2003) references Bonnet's (1999) caution that damage can be done if the impact sustainability related values and actions, that are inevitably expressed when implementing ESD, is not carefully evaluated. In terms of progressing with the WIA on an individual institutional level, it seems process oriented evaluation and research of ESD-practice is key. However, Shallcross and Robinson (2008) also raise various barriers and leverages concerning implications for future ESD research, stressing the research process should be inclusive and involve all actors throughout the process to ensure the research gives back and not only takes from participants. In terms of Continued Professional Development (CPD), Shallcross advocates self-evaluation. One approach to aid ESD's evaluation process is multimodal methods, such as filming lessons as part of a non-judgemental process orientated teacher training (T. Shallcross, personal communication, Jan 27, 2018). Moreover, Shallcross (2005) specifies school focused models of CPD are essential, and stipulates, "in ESD, where the whole school becomes the locus for change, the centralised model has severe deficiencies" (Shallcross, 2005, p. 5); even though centralised CPD methods are said to be successful in some areas that require only the teachers teaching methods to be developed, such as math, this centralised approach does not work for ESD related CPD. Shallcross also specifies "monitoring and evaluating change [Figure 12] against external criteria, such as good practices in other schools can be a significant boost to an organisations confidence"

(Shallcross, 2005, p. 7). Self-evaluation methods also extend to student assessment as they provide the type of reflexive assessment methods called for by key pedagogical approaches (Figure 6) such as action-orientated learning (Leicht et al., 2018).

Shallcross's (2003) summary of the WIA helps further clarify why self-evaluation and action research are emphasised in his first WIA model (Figure 12), and why alternative forms of student assessment and CPD teaching methods are called for: In simple terms whole school approaches mean practising what we teach by trying to minimise the gaps between espoused values and values in action (Posch, 1993) through the integration of formal and non formal curricula (p. 111). Current assessment and CPD methods can limit how learning is measured and developed and in turn where this 'learning' can be practiced. The phrase 'practicing what we teach' is also cited in Shallcross and Robinson (2008), where they reiterate that in order for Posch's (1998) espoused values and values in action gap to be minimised, learning needs to leave the classroom so what is taught in theory is also experienced and witnessed in practice. From this perspective, the WIA happens when pedagogy is integrated "[...] with the social/organisational and technical/economic aspects of school practice" (Shallcross, 2005, p. 3). As with Webster and Johnshon's illustration (Appendix 6) portraying the latter staged responses to ESD, the WIA is also striving to blur formal education's boundaries and necessitate that learning needs to leave the classroom, "by thinking, investigating, and writing about their community, children reconfirm their own and their families worth and gained knowledge about the problems that they and their society must confront (Peterson 1999)" (Shallcross & Robinson, 2008, p. 307). The practice what we teach concept is relevant to all 5 WIA strands (Figure 12 & 13) and therefore identified as a central element in effectively implementing a WIA to ESD.

The ‘practice what we teach’ method can also be identified as a way to counter an apathetic response to ESD, a response commonly reported when problem based themes such as global warming are utilised, as students are often left with the feeling of ‘what difference can I make?’ (T. Shallcross, personal communication, Jan 27, 2018). By enabling SD transformations to be experienced in action, within a local context and with students experiencing first hand how it feels to make a difference, feelings such as powerlessness and apathy, may be remedied.

Student participation through a democratic decision making process, such as a Student-Council, is seen a necessary tool for students to experience SD transformations first hand. Shallcross (2003) explains that “in schools with no student council, few pupils have any idea that things could be different” (p. 114). A functioning Student-Council is highlighted as an essential WIA component for enabling practicing what we teach. Shallcross and Robinson (2008) use multiple academic sources to question; “whether authentic pupil participation is possible without adopting an approach to learning, teaching, and schooling that starts with a whole school approach vision” (p. 316). This is also emphasised by Shallcross (2003), stipulating that, even if Student-Councils exist in schools they do not necessarily function as democratic decision making mechanisms due to hierarchical limitations (the students not having any real power to impact institutional practice), instead they: “[...] degenerate into a forum for damage limitation and a reactive method of channeling pupils’s criticism” (p. 115). Therefore, as Shallcross and Robinson (2008) discuss, it is important to evaluate all aspects of how the student-council is organised, and question, for example; if it is effective in promoting student autonomy; if students are recognised as citizens with rights, or children with responsibilities; if the council is representative of its peers voices; and inevitably if the student voice has any real power. “Voice alone is insufficient, it has to be heard not just listened to

and it has to be powerful" (Shallcross & Robinson, 2008, p. 315). To summarise, the WIA stipulates that:

> Councils work best if they form part of a whole school democratic practice, part of an approach that needs to be embedded at the classroom and institutional level and through community involvement as the interface between local, national and international communities (Shallcross, 2003, p. 115)

As well as providing a method to teach ESD, the WIA is seen as enabling sustainability transformations, such as: reducing the schools ecological footprint (Shallcross & Robinson, 2008). The opportunities WIA presentes are summarised by Hargeaves (2008) review of the WIA as:

> Not only can [WIA] enhance the environmental performance of schools as institutions, but it can raise the quality of education and build a more sustainable future by imparting the values and tools that today's children and youth will need to build and maintain more sustainable societies (p. 72-73).

The WIA is also reported to reduce other more generalised issues such as; vandalism; aggression and destruction of school properties; increasing local indigenous knowledge; linking SE to social skills; and deliver attributes such as self-worth and meaning to students (Shallcross & Robinson, 2008). The need for these wider attributes to be acknowledged and valued is essential for ensuring ESD is recognised as an approach that can, as Leicht et al., (2018) call for, improve the general quality of education.

Despite the WIA offering much scope to effectively address sustainability in schools, if we are to ensure, as Hargreaves (2008) points out, that the WIA can be achieved on a system-wide basis, education systems in countries such as Norway have to "[...] be transformed rather than reformed" (Shallcross & Robinson, 2007 p. 138). To do this, commitment is needed on all levels, from all actors "only by working together at all levels can we ensure ESD moves beyond the realm of pilot projects and individual case studies to a more system-wide catalyst for change" (Hargreaves, 2008, p. 73). Consequently, in both

Shallcross and Robinson (2008) and Hargreaves (2008) a lack of accountability and school leader support is identified as a major barrier to implementing a WIA.

Wals (2015) also uses Shallcross's WIA European project[22] (Appendix 8) to illustrate how social learning processes can happen when multiple actors and areas (within and beyond the school) are engaged, and that; "organizing and facilitating the interactions between all these stakeholders as a social learning process is key to the success of a [WIA] to sustainability (Hargreaves 2008)" (Wals, 2015, p. 93-94). Active and participatory learning is also pointed out in Hargreaves (2008), both as a central part of ESD and advocated by the WIA, highlighting the need for students to be recognised as an equal actors in order to ensure they experience first hand the impact their decisions can have.

Lastly, WIA theory recognises that a common barrier impeding ESD's implementation is that many ESD aspects are at odds with traditional discipline-based learning (Wals, 2015), which is the dominant education system in most societies. With this recognition comes the need to reform and transform education systems so ESD can become part of the whole curriculum and approaches necessary for this to happen in place. The sheer size of this task is also recognised as Wals and Benavot (2017) succinctly summarise, "what is clear is that neither 'business as usual' nor 'education as usual' are adequate" (p. 410) and therefore ESD has to be part of a wider SD strategies. Schools today have a unique potential to ensure students are equipped to deal with current and future SD global challenges, there is no simple, universal, nor quick way to transform established education institutions and therefore the need for flexibility is established and the limitations of the WIA noted.

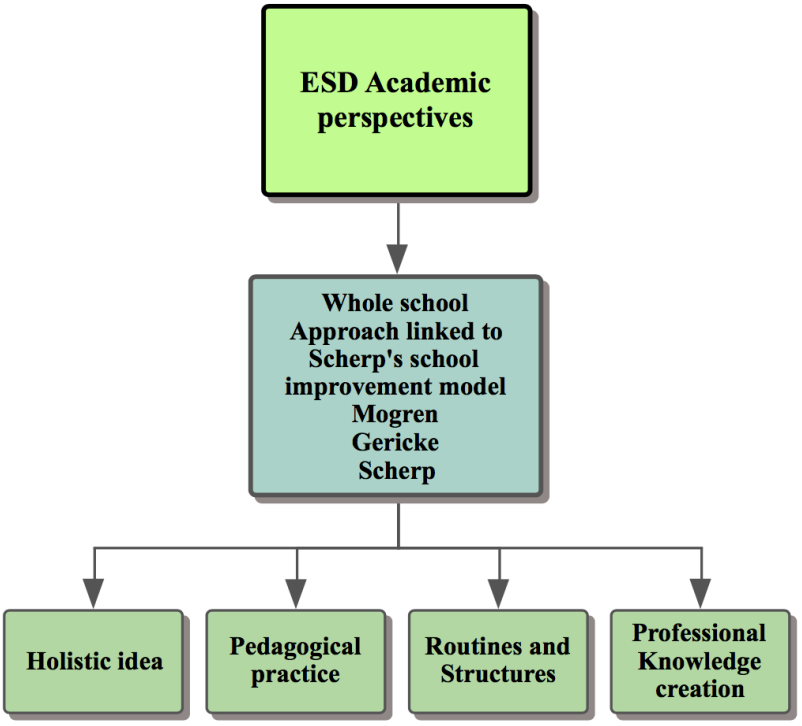
[22] From the research project - Sustainability in European Primary Schools (SEEPS) project 1996-2004 (Shallcross, T,. 2005) and the SEEPS teaching material trial[#] (Shallcross T. 2004).

4.4.3. Scherp's school improvement model for assessing ESD

In the Swediish based study Mogren et al., (2018) a rationale is given to why Scherp's school improvement model is applicable for researching ESD-practices, an alignment with the WIA is also recognised as both are concerned with the organisational aspects of a school. In essence Scherp's model consists of four dimensions (Figure 14).

Figure 14

Concept-map detail - WIA to ESD that links to Shcherp's School Improvement model



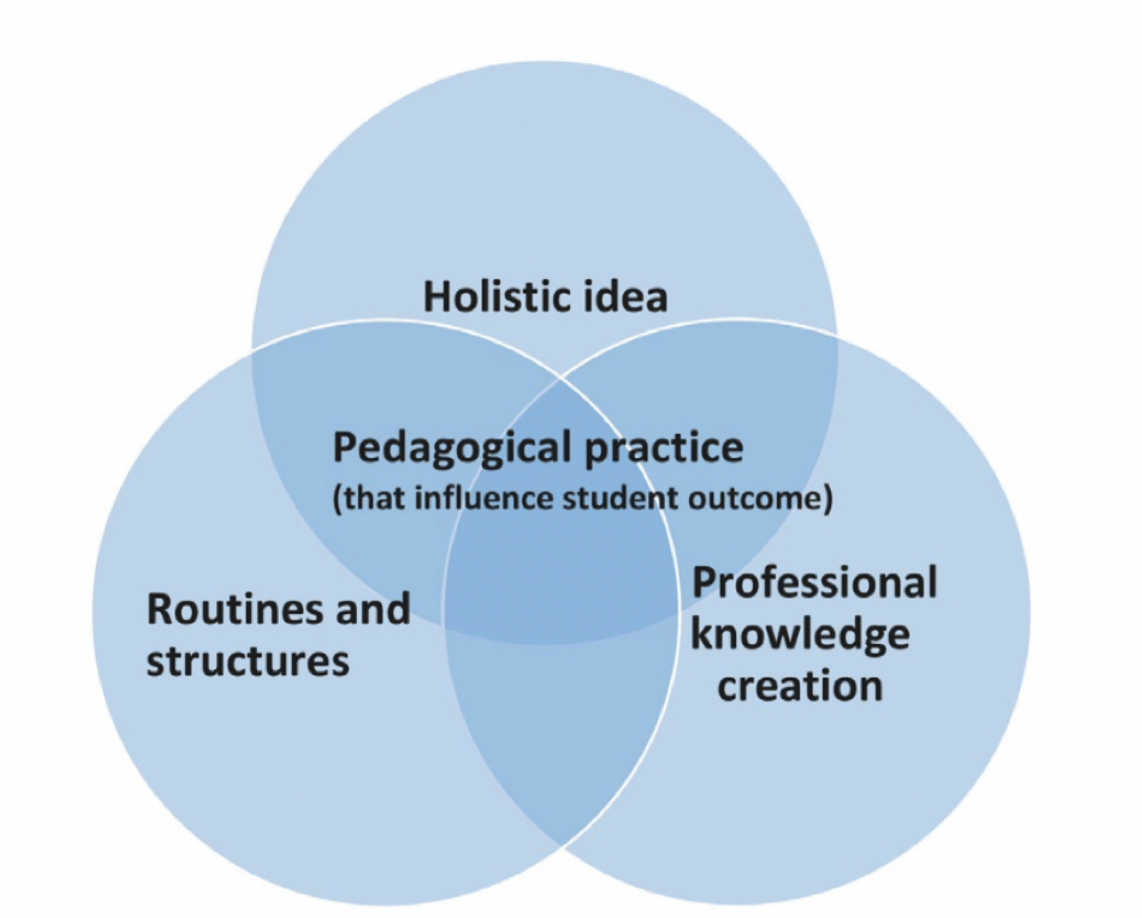
Note: **Concept copyright Mogren et al., (2018). Concept-map Copyright Rosalie Mathie, 2018**

Scherp's model was originally designed "to measure and facilitate analysis of relationships between a school's organisation and the quality of the pedagogic work" (Mogren et al., 2018, p. 3). As with the WIA, Scherp's model (Scherp and Scherp 2007) takes a holistic view of a

school and thus lends itself to exploring what aspects of a school are and are not functioning in terms of school improvement, by measuring how each of these dimensions are operating and how each dimension (Figure 15) interrelates with each other (Mogren et al., 2018).

Figure 15

Interpretation of the Scherp model used to visualise school organisation in Mogren et al., (2018) study



Note: **Copyright Mogren et al., 2018, p. 4**

The methodological approaches Mogren et al., (2018) use, in particular how they utilise Scherp's model to assess ESD-practices and relate this to the WIA, is identified as relevant to this thesis. Mogren et al., (2018) explore ESD implementation strategies of eight ESD-active

schools and 12 reference schools with a total of 263 teachers participating. Whilst their research methods are not used for assessing a single case study (their research is questionnaire based) their understanding and approach to defining these 4 dimensions is insightful and helps to envisage how the concepts aforementioned ESD policy and theory can be utilised for exploring ESD-practices at a school level. Consequently Mogren et al., (2018) interpretation of the Scherp model (Figure 15) is utilised in the analytical framework (Figure 16) for this thesis, and also influenced which topics to cover in the interview guide.

In terms of Mogren et al., (2018) research findings, the article concludes that from a teacher perspective the schools that "[...] adopt an interdisciplinary ESD implementation strategy in combination with an integral general quality approach have more supportive organisational structures, [...] than schools that adopt an award-based ESD implementation strategy with an external general quality approach (Mogren et al., 2018, p. 20). In turn the findings indicate that while ESD and the WIA advocate for external collaborations to take place the findings showed schools "[...] should initially attend to its internal quality assurance before seeking such collaboration [...]" (Mogren et al., 2018, p. 20).

The need for proactive leadership when ESD-practices are initiated was also identified in order for implementing ESD effectively (Mogren et al,. 2018). The article also concludes that Scherp's model is appropriate for investigating whole school approaches to ESD, for reasons including; it is a robust model that has been utilised in Sweden for over a decade; it can assess how a holistic vision is implemented in practice and also be used to assess schools from generic perspectives; and it lends itself well to visualise the ESD staged response (Scott, 2013) model (Mogren et al,. 2018).

At the time of conducting this research Mogren et al,. 2018 interpretation of Scherp's model was the clearest models found for assessing schools ESD progress through a WIA lens.

Not only did the results offer an insightful source in which comparison and triangulation of this study's results could be explored, the model also further enriched the idea that a combination of both ESD policy and academic aspects of the WIA could be utilised as an analytical framework in which schools ESD implementation progress could be assessed.

4.5. Analytical Framework Rubric

Figure 16 details the thesis Analytical Framework. This rubric collates the selected ESD policy and academic perspectives previously presented. Whilst it was clear from the onset, due to the pre-existing *ESD in Practice* data, that the case study school did not currently utilise the WIA for implementing ESD, it was clear the WIA lens, and this corresponding framework, could be employed for exploring the case study school current ESD-Practices.

Figure 16

Analytical framework Rubric -connecting ESD academic and policy perspectives

Analytical Framework Rubric					
Education for Sustainable Development (ESD) Emerging themes from the Whole Institution Approach (WIA) to ESD Policy and Academic perspectives					
UN policy perspective UNESCO ESD key learning objectives/domains of learning for achieving the SDGs	**UN policy perspective UNESCO Key pedagogical approaches in ESD**		**UN policy perspective The Whole Institution Approach**	**Academic perspective (Shallcross) The Whole Institution Approach**	**Academic perspective (Morgen, Gericke & Scherp) The Whole School Approach linked to Scherp's school improvement model**
Cognitive	Learner centred approach	Holistic approach to ESD	Curriculum, teaching and learning	1. Formal curriculum and pedagogy	Pedagogical practice dimension (that influence student outcome)
Socio- emotional	Transformative learning		Facilities school operation	2. Institutional Culture and Ethos: Social and Organisational Aspects.	Routine and Structures dimension
Behavioural	Action oriented approach		Governance, policy and capacity building	3. Institutional Practice: Technical and Economic Aspects	
				4. Self-Evaluation and Action Research	Professional Knowledge creation dimension
			Community partnerships and relationships	5. Community links	

Note: **Copyright Rosalie Mathie 2018**

4.6 Analytical framework rubric and Thematic analysis

Figure 17 details the analytical framework rubric alongside the initial themes developed for coding the case study findings. Figure 16 also visualises how the emerging themes developed for coding assist in categorising barriers and/or leverage points identified. For example, the table can be used in order to trace the findings gathered back to theme and corresponding concepts. By making these connections exploration into potential ways in which future ESD-practises in the school can be supported is possible.

After this analytical framework was created Chopin et al., (2018) report was found that also utilises a WIA lens and Thematic Analysis as a way to research ESD-practices; "…to identify good practices as well as factors associated with successes and challenges" (p. 8). Whilst it is unknown the extent to which the methods are alike, finding both the WIA lens and Thematic Analysis utilised to evaluate ESD-practices in schools offers a way to potentially validate and develop this type of methodological approach further.

Figure 17

Analytical framework combined with emerging themes used for analysis

Analytical Framework Rubric & Thematic Analysis						
Education for Sustainable Development (ESD) Emerging themes from the Whole Institution Approach (WIA) to ESD Policy and Academic perspectives						
UN policy perspective UNESCO ESD key learning objectives/ domains of learning for achieving the SDGs	UN policy perspective UNESCO Key pedagogical approaches in ESD	UN policy perspective The Whole Institution Approach		Academic perspective The Five Strands of a Whole school Approach to Sustainability Education (Shallcross)	Academic perspective The Whole School Approach ESD implementation framework - linked to Scherp's school improvement model (Morgen, Gericke & Scherp)		Thematic Analysis Initial themes developed for coding
Cognitive	Learner centred approach	Holistic approach to ESD	Curriculum teaching and learning	1. Formal curriculum and pedagogy	Holism dimension	Pedagogical practice dimension (that influence student outcome)	1. Curriculum
Socio-emotional	Transformative learning		Facilities school operation	2. Institutional Culture and Ethos: Social and Organisational Aspects.		Routine and Structures dimension	2. School Culture, Routines & Structures
Behavioural	Action oriented approach		Governance policy and capacity building	3. Institutional Practice: Technical and Economic Aspects			3. Policy & Practice
				4. Self-Evaluation and Action Research		Professional Knowledge creation dimension	4. Continued Professional Development, Monitoring & Evaluation
			Community partnerships and relationships	5. Community links			5. External Actors

Note: **Copyright Rosalie Mathie 2018**

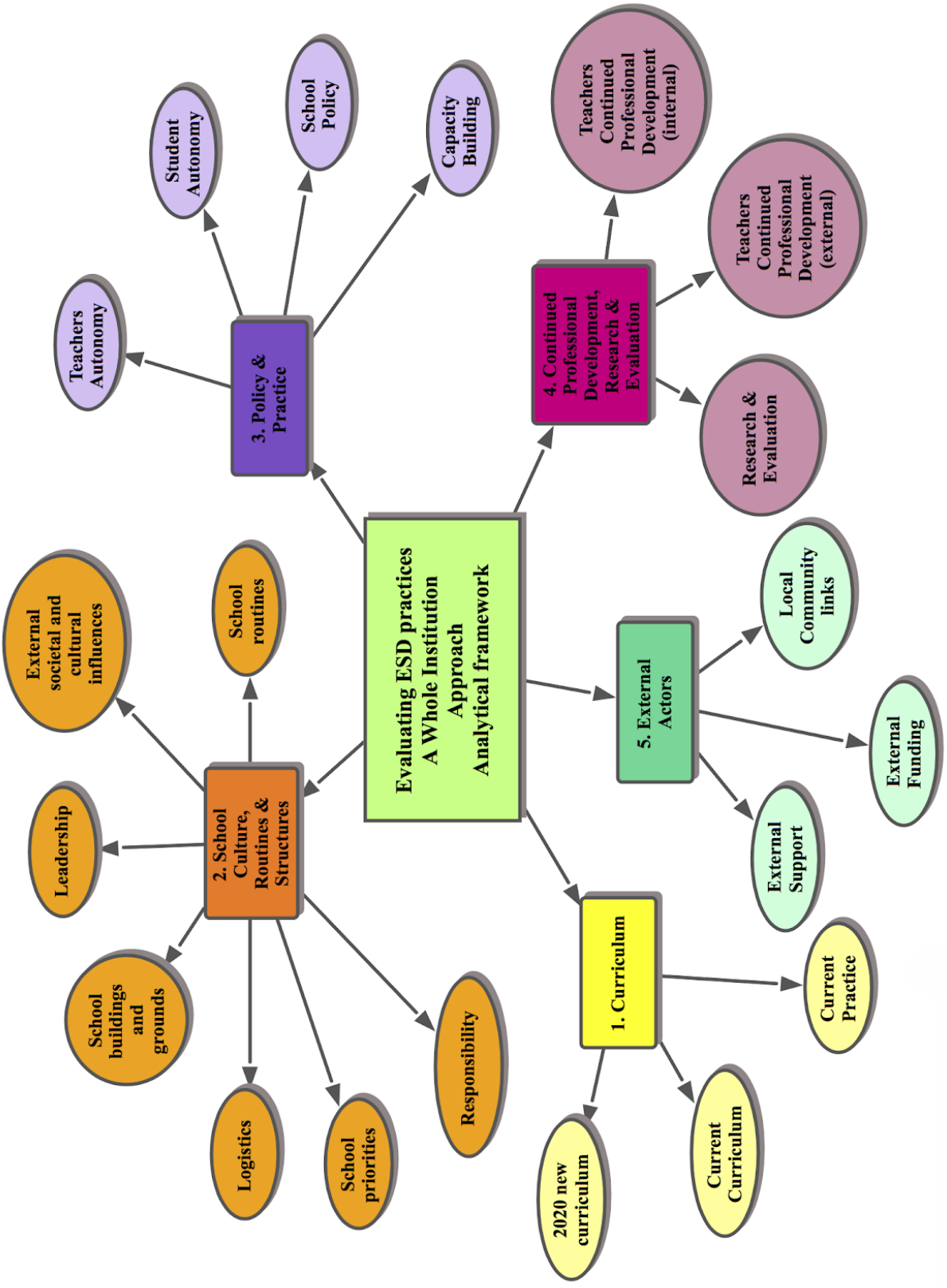
Chapter Five: Research Findings

Five themes derived from the aforementioned WIA analytical framework rubric are presented; Curriculum; School culture, Routines and structure; Policy and Practice; CPD, research and evaluation; and External actors. Within each theme the findings are categorised into sub themes, an overview of which is shown in Figure 18. While all the findings collated gave valuable insight into ESD-practices at the case study school, due to the limited research scope of this 30 credit thesis, only the findings selected to best address the research questions and referred to in the discussion are presented here. For the purpose of rigour and potential future research the remaining findings are shown separately in Appendix 5.

Figure 18

Visualisation of research findings themes and sub-themes

Note: **Copyright Rosalie Mathie, 2018**


Evaluating ESD practices
A Whole Institution
Approach
Analytical framework
1. Curriculum
2020 new curriculum
Current Curriculum
Current Practice
2. School Culture, Routines & Structures
School buildings and grounds
Logistics
School priorities
Responsibility
Leadership
External societal and cultural influences
School routines
3. Policy & Practice
Teachers Autonomy
Student Autonomy
School Policy
Capacity Building
4. Continued Professional Development, Research & Evaluation
Teachers Continued Professional Development (internal)
Teachers Continued Professional Development (external)
Research & Evaluation
5. External Actors
Local Community links
External Funding
External Support

5.1. Curriculum

Findings from curriculum are presented in three sub-themes; current practice; current curriculum, and the 2020 new curriculum.

5.1.1. Current practice

The findings establish that several annual ESD project days take place, allowing ESD to be implemented in an interdisciplinary way within the parameters of current discipline led education system. These project days involve all students and the majority of teachers, often with input from external actors to help deliver the content. The participants also discussed numerous issues that impede implementing ESD and within this some unintended consequences regarding the way in which ESD is currently practiced are highlighted. For example, some participants said that teachers can often view ESD interdisciplinary 'project days' as an extra addition to general curriculum requirements, resulting in feelings of overwhelm: "So, they see this project [project days] as a bad thing because it takes, steals time from their education" (Teacher). When attempting to approach fellow teachers to work on an interdisciplinary project, a common experience mentioned in both focus-group teacher interviews was ESD project days were viewed negatively: "I think many teachers maybe don't like it so much because they think it takes up a lot of time, it's a lot of, its stressful, it difficult" (Teacher 2). The teachers interviewed in both 2017 and 2018 felt that an interdisciplinary approach was not commonplace in the school and happened only through The Sustainable Backpack[23] (DNS) funded project days. This explanation was given to why the interdisciplinary approach might be perceived in this way: "Like they have to take things they were going to teach that lesson, they have to take, teach it another time, so they don't see it as an opportunity to learn about their curriculum." (Teacher).

[23] DNS in Norwegian is - Den Naturlige Skolesekken - Which is why the original acronym will be used

A new subject, Technology and Research, was discussed in all teacher and school management interviews. It was presented as an existing way of implementing ESD and a way the school has found to utilise a student led, action orientated, approach to learning. External funding was awarded to develop this new subject. Due to the subject's open competence aims and current curriculums flexible learning objectives, the school saw this course as an opportunity to embed ESD as the core content focus. However, recruitment issues at the time of the 2018 interviews[24] meant it was not functioning in the way they had envisioned "we have to find more students that believe in this, now it's just 10, it has to be 30 or 40" (Deputy-head).

5.1.2. Current curriculum

It is clear the current curriculum has allowed ESD to be practiced, through the aforementioned ESD themed project days and the Technology and Research subject. ESD course content was also mentioned within the subjects - French, Biology and Business. "I [...] have had a specific chapter on environment in French. It is one of the curriculum goals, because the curriculum is very general, so it is working with ESD in subjects too" (Teacher).

From a management perspective it was perceived that, whilst there is the option for all teachers to freely choose to implement ESD into their subjects, the majority of ESD teaching currently happened in, or is initiated by, teachers within the science department: "Yes, it is the freedom to, absolutely, but we have to reach all, it can't be just in the scientific subjects, it must go much wider" (Deputy-head). The findings indicated that if teachers are motivated it is possible to implement ESD due to established teacher autonomy and the openness of the current curriculum.

[24] In Autumn 2018, new information was shared (personal communication via *ESD in Practice*) that this course had been suspended due to lack of student enrolment.

Whilst the teachers interviewed were aware that the national curriculum feature ‘to educate environmentally conscious people’ as an overarching goal, on a day to day basis and for the purpose of meeting the current curriculums exam requirements, ESD is not prevalent, nor a requirement within the majority of the single discipline subjects; "Even though in any subject this sustainable person should be important, for me, I forget it, in like physics 2nd grade" (Teacher). A reason for this was discussed in various of the interviews, for example: “Responsibility for the exam that comes in May, June. They know what the exams means for the student and you can't use much time during the year working with green-shift” (Deputy-head). The pressure felt by teachers to deliver the competence aims connected to their own single subject, to support students to achieve high grades, was seen to directly impede implementing ESD. Moreover, numerous teachers interviewed mentioned the core competence aims as inhibiting their ability to teach ESD and follow through with the overarching goal to educate environmentally conscious people, for example:

> What are we going to do with it? ehh, there are many things, for example in biology and so on, we go out and pick mushrooms [...]I could have done so much more with them, instilled joy and love over what we find in nature [..]. but I have no time, it is just these competence goals [...] it misses out on inputting the/some passion for what I'm interested in (Teacher)

5.1.3. 2020 new curriculum

The 2020 curriculum renewal was discussed in all 5 interviews and always in an optimistic light by each stakeholder group. The hope and anticipation for the new 2020 curriculum revision to support ESD and aid interdisciplinary learning was very clear:

> I sincerely hope that it has been signalled with the revision of the new curricula, that it will be easier to highlight where in the competence aims, where there are overlaps so you can see how you can cooperate, as a little help on this road is needed (Headteacher).

> Yeah, I think it is difficult to do it with how the curriculum is currently is, but I think, my hope is that the new curriculum is more holistic and it’s easier to work like this and easier to work interdisciplinary,

> [...] but the way the Norwegian school is now I think it is difficult [due to] exams [...] come every year and it's important for us that the students score well, and they can do that without knowing about sustainable development. (Teacher).

5.2. School culture, routines and structure

'Hope' for the new curriculum to prescribe ESD (see quotes in previous section 5.1.3) is also reflected in the participants mention of key concepts for example; holistic approach, interdisciplinarity, deep learning, and the desire for defining how SD link into the competence aims. The participants interviewed seemed receptive to the curricula renewal and were optimistic that the changes will utilise and better integrate ESD as a main interdisciplinary theme. When the Deputy-head was asked what the biggest area stopping progress with ESD the answer was "it is the curriculums that exist today, [they] are not green shift, [it] is not very clear in the curriculums" (Deputy-head).

5.2.1. Responsibility

Numerous participants discussed concerns lack of clarity over who had the responsibility, capacity and therefore ability to implement ESD. "I do not have the capacity to drive that train here, so I need some more who can join and preferably from management" (Teacher). Teacher interviews indicated they didn't feel supported by management to facilitate implementing ESD into the school beyond their own subject and the existing ESD themed project days: "They have so much on their plate, so if we mentioned it they get really more stressed out, but they are like, oh it's so good what you are doing, it's really great, keep doing it" (Teacher). While teacher autonomy is presented later (section 5.3.1.) in terms of responsibility it is relevant as some teachers felt they did not have the authority to ask the teachers to collaborate

on ESD projects as the response they got was " [...] you are not in command, why should I listen to you" (Teacher).

Currently the C-C who manage the school support implementing ESD to schools via funding support and accountability. The Schools Regional director acknowledged that in the future it may be appropriate for them to take more of an initiator role in implementing ESD, however currently it is the individual school has responsibility to implement ESD "Even though we have Regional Directors that are clear in a management line, the schools are quite autonomous [...] they must choose their solution to get the results they want at their school." (Regional Schools Director). Whilst the Municipalities Regional School Director acknowledged they had a role in supporting schools to educate environmentally conscious people; "Yes, it is clear one has a role, something else cannot be said [...]" (Regional Schools Director), it seemed uncertain as to what stance they think schools should take for implementing ESD "Yes you cannot get away without using education in some way, but if we are going to be a driver, or if it is up to the teacher's profession and his subject, that's another discussion." (Regional Schools Director).

5.2.2. School priorities

Whilst the motivation to implement ESD exists in both school management and teachers interviewed, the schools current lack of resources, in terms of time, ESD competencies, and money, were referenced as limiting factor for implementing ESD. For example lack of time for teaching and planning:

> We wanted to get students to act sustainably, not just learn about it in school. But the problem is the time [for example] we will have shorter school days (Teacher).
> We have this 15% teacher position it's too small. As department leader, I have so many other things to do [...] So, I need maybe a 50% teacher that can work with relationships to you [ESD in Practice] to make plans to build up our teacher competence, in this subject, in green-shift, so we have to increase support for teachers to raise their competence skills. (Deputy-head).

Even with the knowledge that this coordinator position increasing in size, from 15 to 20% [25] the time allocated for this position is identified as insufficient as the role includes liaising with multiple external actors.

Numerous schools priorities superseding ESD were discussed in all interviews including, below average exam results, economic issues due to overspending in the past, however low enrolment figures was seen as the highest priority:

> The most important thing for the school now is recruitment. [...] You know here you have to travel 40 minutes, one hour… so a big challenge for us is to get, to fill up the school with students. (Deputy-Head).

5.2.3. School buildings and grounds

both teacher focus-group interviews agreed opportunity and scope to learn about sustainability from the school grounds, with various ideas to involve the students in making sustainable improvements to the school campus. Yet with these suggestions, various barriers were voiced that meant it was difficult to achieve. The most frequent barrier mentioned was managing of the school buildings and grounds was externally outsourced, thus making it difficult for students and teachers to get involved with making sustainability improvements. The C-C interview clarified that the majority of the schools in their region were organised this way and saw it as more important for the pedagogical management to be managed internally "No it is outsourced to an external company. The company is responsible for the buildings, but what is good, what is concerning pedagogical and pedagogical management, those are the important things we can prioritize" (Regional Schools Director). In all interviews making improvements to the school's canteen was voiced as an opportunity for the students to put into practice what

[25] The teacher that had 15% of their position dedicated to coordinating the ESD themed projects has subsequently been increased to 20% in Autumn 2018. Since the interview, other project responsibilities have also been added to this coordinator role which give reason to further understand the role that external actors play and assess the amount of resources it takes up for the schools to be part of these external projects.

they learn. For example, a current ESD project concerning food waste and local food gave the theoretical understanding of global and local food waste issues, however, due to the canteen contract being outsourced, little opportunity exists, despite the want of trying, for minimising food waste to be implemented. So, despite interest in this coming from all actors the capacity to follow this through is not yet in place, another reason given for this was concerning economic viability of, for example sourcing local organic food locally:

> But it is hard to make it profitable in Norway. I have experienced it from another school I was at, it requires a good round with the ones you actually hire in... It only takes one round and then they go bankrupt too, they do not earn what they need to (Headteacher).

5.2.4. External societal and cultural influences

Both school management and teachers interviewed identified cultural external influences as a barrier stopping students, staff and teachers to engage with ESD. Some participants felt the responsibility to 'fix' some of the current SD issues society faces lies higher up and is not the responsibility of schools. A certain level of apathy was felt, both in terms of what difference teachers could actually make and also the lack of motivation for students to engage with ESD. It was pointed out numerous times that it was hard to teach SD issues when society in general was geared towards being unsustainable thus making it hard for students to feel empowered to make a difference:

> If you look a little over this again, this is a system error. The whole community is geared to increased consumption, [...] We have political leadership who preaches that we must consume more, we must waste more, we need to spend more resources. And the market forces are of course all the time, you have to buy the latest phone and drive long distances to the gym [...] rather than jogging a little down the road and saving the money. The things I mentioned now they affect these kids all the time (Teacher).

Teachers discussed many approaches they used or wanted to utilise to engage apathetic students. For example, utilising entrepreneurship, technology and innovation, and working with what is 'trendy' and interesting for students now. Nevertheless, when discussing one of

the schools annual ESD themed projects student feedback included “they were still a bit like that why should we learn about this?" (Teacher). Teachers interviewed recognise there is a long way to go for engaging the students to want to work with SD. Another example highlighting this apathetic response was given in regard to studying the terrible working conditions in international textile factories; "yes but... I have seen it on the news, I can’t handle it anymore" (Teacher).

5.3. Policy and Practice

Prominent findings relevant to capacity building, student and teacher autonomy are presented here with additional school policy findings presented in Appendix 5.

5.3.1. Teachers autonomy

Teachers interviewed reported a certain amount of flexibility and autonomy was present enabling motivated teachers to implement ESD into their teaching. However, as they want to teach ESD in an interdisciplinary way they feel there is not enough interest in ESD for it to be taught holistically:

> But the problem with projects like this is that I can’t do it alone, I have to have other teachers with me and if I am going to work with UBU I can't do it just with science, I also need the economic part and the social part, to do it real, so I am free to do almost whatever I like, it’s not so easy to easy to implement ESD alone, if your know what I mean? (Teacher).

Teachers are trying to work in an interdisciplinary way, and have the autonomy to do so, however, is it hard to achieve in terms of logistics and motivated teachers.

Implementing ESD is also very teacher led therefore teacher dependent: “So that’s kind of a bad thing, it’s a general problem that these sustainability projects are really dependent on the

persons" (Teacher). When discussing teacher dependency and what happens if a teacher leaves the response was "yes, then the project is dead" (Teacher).

When discussing the idea of making working with ESD part of the teachers obligations with the Deputy-head the answer was:

> I think that is a difficult way to go [...] that teachers take [ESD] in their subject in a voluntary way to develop to their own subject I think. We cannot have a contract [...] it's not the way to go I believe. But you know, in two years time it's coming the new curriculum (Deputy-head)

5.3.2. Student autonomy

To some extent via Student-Council and Technology and Research course the students have a certain level of autonomy. However, the general impression was that student autonomy was underutilised and not fully functioning with one teacher explaining the Student-Council as: "[...] it hasn't been working that well here, and we really don't know why, and we put down a lot of energy in it to try to make it better, so maybe it works better this year" (Teacher).

The aspiration for school activities to be more student led was reported when discussing the teachers hopes for the future:

> I wish the students were doing things of their own accord [...] I wish greenhouses and compost were run by students [to] grow and harvest and take home for dinner or it could be or the canteen that served there, but there are so many rules (Teacher)

5.3.3. Capacity building

Numerous aforementioned barriers impede ESD in terms of capacity building. For example, high staff turnover was pointed out as a barrier as well as other priorities superseding ESD. High staff turn-over was also a reason given for the schools green-shift vision not having made much progress:

> This was founded with other leaders [...] and a whole different middle management as well, and then they quit and we got new people in. So I don't think they [new management] feel like they owe it as much as the old (Teacher)

> The only thing I have noticed about the green-shift strategy here is I think the project days comes from this and sometimes we are encouraged to not print out as much paper, that we should keep things digital, but other than that I haven't noticed (Teacher)

Also, current evaluation and CPD systems in place was discussed as a potential area in which ESD capacity could be built in the future (presented in 5.4.2). However, a lack of ESD related external CPD currently available highlighted that a change in priorities on a government policy and curriculum level was needed, not just at the school:

> A lot of teachers go on courses now paid by the state it's called competence for quality, but when you see and read what the most priority courses are, it is not green-shift. It is Math, Norwegian, to make the pupil able to write and read, those are basic competencies […] Today you don't find green-shift on the top of the priority list (Deputy-head).

Both teachers and school management articulated the knowledge, aspiration and understanding of why a holistic approach to ESD is preferential and the reasons as to why the ESD key pedagogical approaches[26] should be integrated into the school's own pedagogical approach.

> Yeah, I think it would be fantastic to work holistic like this, but then we have to break down the whole school, you know culture in school is a really be thing, and it's difficult when the culture has uh stubbornness. It's very difficult to shake it loose [...] I know schools in Sweden they work like this and its fantastic, so I definitely think this is the way to do it (Teacher).

5.4. Continued Professional Development, Research and Evaluation

Both internal and external CPD related findings are presented here, however due to Research and Evaluation having crossovers with the sub-theme External Support, these findings are presented in 5.5.1.

[26] Action-orientated learning; transformative learning; and the learner centred approach (UNESCO 2017a)

5.4.1. Teachers Continued Professional Development (external)

ESD is not a focus for the teachers external CPD offerings. As mentioned previously other subjects take priority over sustainability like maths and Norwegian. ESD competence training however is offered via DNS for the select teachers involved "through the projects funded by DNS we get to go [conferences and so on (Teacher a)] but that is the only possibility" (Teacher b). The Deputy-head also explained the lack of CPD ESD courses available and saw this as an oversight of the education department:

> When you look and the new curriculum that comes in 2020, green shift is one of the, you find it in every subject. So, it is a big miss balance between the visions that come [and] the courses arranged today for teachers (Deputy-head).

Therefore any focus on ESD has been the school's responsibility to initiate and has not been mandated from the C-C.

5.4.2. Teachers Continued Professional Development (internal)

When discussing potential ways for integrating ESD into the whole school the idea of utilising both CPD and existing self-evaluation systems was seen as promising "yes lesson study is a method that can be used to increase [ESD] learning and methods used in the classroom in a good way" (Deputy-head). Both Lesson Study and action learning[27] were discussed as self-evaluation strategies already used by teachers to evaluate and improve their lessons as part of internal CPD. The potential of utilising these pre-existing methods as an ESD CPD was also discussed:

> Yeah that would be great, but the staff they tell us what to do in this lesson study, so now we have to have something - the main theme is evaluation. So, you are not free to choose whatever you like. But if I went down and said, we want to do this, and we want it to be SD, maybe they hear us (Teacher)

[27] More info on Aksjonslæring can be found at https://praksisveilederen.pressbooks.com/chapter/kapittel-21-aksjonslaering/

Teachers are also assessed by their department head each year, by two of their classes are evaluated, one chosen by the teacher and other chosen at random. Students also have the chance to give feedback via surveys at the end of a course, it is unclear if this is for some or all courses.

5.5. External Actors

This section focuses on findings found concerning external support as findings found in this sub-theme were selected as the most key in terms of potential leverages**.** Consequently findings under the sub-themes External funding and community links are archived in Appendix 5.

5.5.1. External support

In terms of resource support the Norwegian Government's promotion of the green-shift agenda plays a central role in promoting sustainability and encouraging the school to include SD in their strategy. The term green-shift is frequently referred to throughout all interviews and often used in place of SD or ESD:

> We think it's very important to find the right teachers that have green-shift views and visions. [...] we have a great responsibility for working now with this green-shift, so we are, I hope next year we can increase the communication, the collaboration with you [ESD in Practice] (Deputy-head).

While the term green-shift has helped to lift the SD profile in the school's strategy it was also reported at odds with the everyday practices "I think it is a bit sad that we are going to work with the green-shift and we don't have like recycling stations (Teacher).

In two of the interview participants were asked if the school utilised any UN and/or other international ESD resources. The Deputy-heads response was “Maybe in naturfag [...but for discussing ESD within management?...], No” (Deputy-head). The teacher's response was:

> I don’t know if we have talked about them [SDGs] with the students but we have learned about them in [DNS] conferences, and I guess we are going to mention them in the [food based] project this year (Teacher).

Therefore the general impression was international ESD resources were seldom used and as of yet underutilised in terms of teaching ESD or management strategy.

In terms of external support DNS was reported as the main. Teachers directly involved with DNS said they received support and training for implementing ESD, in particular for understanding interdisciplinary approaches, and to ensure all three aspects of SD - environmental, social and economic were incorporated. The support DNS provide was highly praised by the teachers “yes we love DNS it is perfect for us” (Teacher), though only a small percentage of the staff have access to DNS support with 2-4 teachers directly receiving support/training from DNS each year:

> So that's not much out of 80, its small. [They also provide resources but] we miss the time to tell other teachers about this so it's not a big part of our school strategy, even though we think that is should (Teacher)

Whilst DNS does require commitments as part of their contract to fund projects it is unclear what capacity DNS has to follow up if the case study school have met the requirements[28]: “when they sign the contract from DNS, [management] have to agree to facilitate interdisciplinary learning, [...] get information out to the school, so actually [management] have not fulfilled their obligations” (Teacher). It is clear the external support DNS provides is valuable and welcomed by the teachers involved, however teachers say they lack support in making ESD obligatory:

[28] It is unclear if the DNS funded projects at the case study school are running in the way they intend to, for example, involving all staff and integrating the projects within the curriculum, instead of additional extra curricula project days.

> Now it's not obligatory that we do this but if leaders said that this is a project we are going to do, it wouldn't be so much fuss about who [does and doesn't] join, when, how and so on (Teacher).

Moreover, organising and fulfilling all the requirements DNS and other ESD external actors[29] require was reported as time-demanding and often not paid for:

> I have like 10% [paid position for ESD related work] resource this year, [...] but [other teachers] have nothing, so they do it like for free. 10% is not only to work with these two projects, I have other responsibilities as well [...] some weeks it's nothing and others it's a lot of like writing these things [e-g DNS reports] attending conferences and attending meetings [...] We are still new so we have this, uh yeah, but others here, they are like - you have to calm down, we don't work for free, so it's really person dependent, you have to have this energymark for it (Teacher).

The second form of external support is provided by the *ESD in Practice* research project. There is anticipation that the status attached to collaborating with a university on such a project, could help lift the school's profile and support their efforts in attracting more students.

> Our perspective is that we have a school that survives in cooperation with other schools, but we will make a clear profile on who we are. It is important then that students [...] choose us versus choosing the schools that are more central. So, the idea is that we will create a concept here that makes us exciting and innovative and all these things here, and then we think that cooperation with the academic community and for us is very important then." (Headteacher)

It is clear this collaboration is appreciated and welcomed by the staff interviewed with hope that the partnership can provide the support and guidance needed to enable the school to work with ESD in an achievable and long-lasting way:

> First and foremost we must form a good relationship [...] good, tight contact. We must build up [esd competency] with teachers who are especially interested teachers that go in front. [...] yes maybe 5 teachers that can show the way I think it is important, you [ESD in practice] can help us to build up these 3, 4, 5 persons (Deputy-head). Like the competence, to give them the skills needed? (Interviewer). Yes (Deputy-head).

[29] Part of the requirement for DNS funding is that other external actors are involved in the project

As the *ESD in Practice* partnership is in the initial phase the outcome and amount of support that can be available to the pilot schools' is unknown. However all actors interviewed were positive about the partnership, with the C-C viewing the *ESD in Practice* and subsequent pilot schools as a useful way to see how ESD can be implemented effectively.

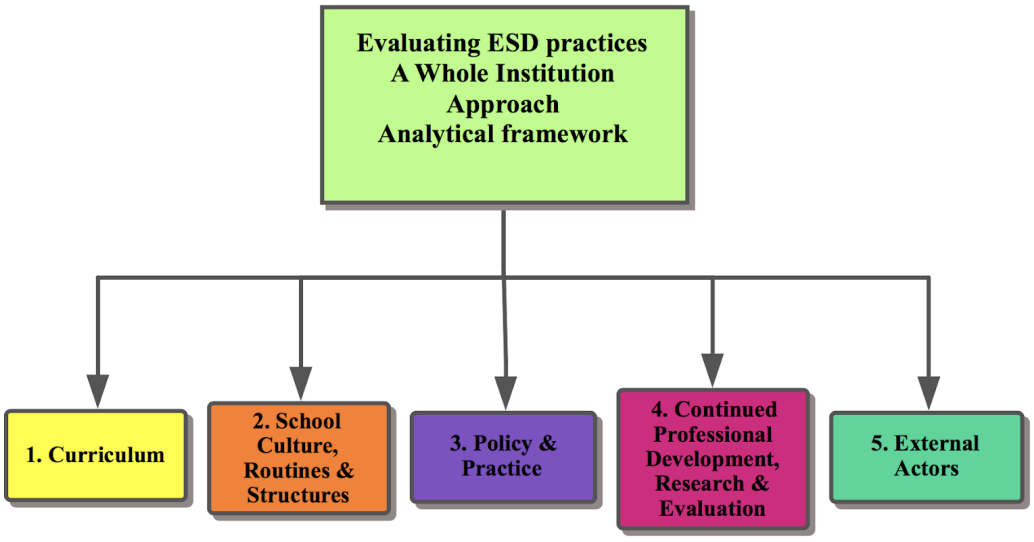
> We and our schools have a good and committed cooperation with both NMBU and other educational institutions. There has really been set up a good system, and further developed through CDP. We will further develop it [the cooperation] to become even closer. For example, with a special focus on 'the green' now with NMBU and us and our university schools. Here I think we should use the university schools as a lever, to see the entrance before we run it on a large scale. (Regional Schools Director)

Chapter Six: Discussion

The research findings offer a rich picture from multiple actor perspectives of how ESD is currently practiced within the school's capacity and approach. This chapter is divided into three discussions responding to the research aim, objective and research questions by discussing selected findings from the five themes (Figure 19). Firstly 6.1. discusses the most prominent barriers found impeding ESD in the school's current practice. Then 6.2. discusses key leverage points to consider for future ESD-practices in the case study school. Lastly 6.3. evaluates the analytical framework and WIA lens used in this thesis and considers how the WIA can support future ESD implementation in Norway.

Figure 19

Analytical Framework – A Whole Institution Approach lens - Overarching themes used for analysis and categorisation of findings



Note: **Copyright Rosalie Mathie, 2018**

6.1. Prominent barriers impeding Education for Sustainable Development in the case study school

At the case study school ESD is taught within some single subjects, one specialised course and annual interdisciplinary project days. Although the school has explored aspects of a holistic approach to implementing ESD, numerous limitations are seen within this. The school's Technology and Research course has an interdisciplinary approach to ESD in its ethos, yet had a lack of students enrolling resulting in the course not running. While

interdisciplinary courses like this have the means to teach many aspects of ESD, and act as a catalyst for integrating ESD further into the school, a big responsibility is also placed on that one course to succeed. Moreover any new courses will have to compete against more established courses and core subjects which places ESD at risk of not lasting long term if the course is unsuccessful. Also, even if an interdisciplinary approach is found within this new subject, ESD is still confined to one course and therefore only a limited number of students will experience this.

ESD is also practiced through annual interdisciplinary project days that involve the whole school. However, these days are often viewed by teachers as 'extracurricular', so whilst they are seen as enjoyable days, they are identified as a barrier as they augment the idea that teaching ESD is additional to the teaching workload. Bjønness and Sinnes (2019) also found that teachers from all four of their case study schools saw working interdisciplinary as time consuming and in itself not sustainable, indicating a common response to ESD interdisciplinary teaching

The case study school's current approach can be described as a 'bolt-on' response to ESD (Scott, 2015; 2013). Whilst it is possible to achieve some aspects of ESD objectives within the schools current practice, the extent to which the school can permeate ESD throughout the curriculum is limited, resulting in the school being unable to move beyond a bolt-on response to ESD. A reason for this is that the school's curriculum, as with most European formal curriculums, is predominantly single-subject and discipline-led. This traditional discipline-based learning method, where a teacher primarily transfers theoretical knowledge to their students, is often seen at odds with the ability to implement ESD effectively (Wals, 2015). For example, it is difficult to achieve, the 'practice what we teach', element of the WIA, if the lesson does not leave the classroom, which is essential in order to

minimise the gap between, Posch's (1993) espoused values and values in action concept (Shallcross & Robinson 2008). Wals (2015) explains that this incompatibility with holistic integrated approaches that support schools transitioning sustainably, is recognised as one of ESD's major challenges globally. Subsequently if what is taught in theory is not experienced and practiced within the school and local community this is seen as a major barrier.

Another prominent barrier to moving beyond a bolt-on response to ESD concerns the outsourcing of school grounds and building management. Currently the C-C[30] outsources the maintenance and running of the school's cleaning and food suppliers to independent private companies, meaning that the pedagogical management is separated from the practical everyday running of the school. With the school's pedagogical based management team having no authority over the everyday running of the school buildings and grounds, this leaves little room for the school to implement SD changes and 'live what they learn' (Appendix 4). Therefore, integrating ESD holistically is severely limited as is the student's ability to explore sustainability actions beyond the classroom setting. Bjønness and Sinnes (2019) refer to outsourcing of management being commonplace with over half of the region's school's canteens management currently outsourced. Limiting the learning space to the classroom instead of utilising these more non-formal learning spaces makes it hard to learn about sustainability, as intended through both WIA defined in ESD policy (UNESCO, 2017a; Leicht et al., 2018) and WIA theory (Shallcross & Robinson, 2008). Furthermore, while efforts to empower students had been made, student autonomy was still underutilised as systems that gave students a voice, like the Student-Council, were not functioning well.

The findings show that only a small percentage of teachers work directly with ESD, and teacher preference governs if ESD is integrated into their lessons. So while the flexibility,

[30] The County Council (C-C) are the owners of the school alongside 33 other upper secondary schools.

choice and autonomy that allows for teachers to choose to integrate ESD into their teaching is present, the number of teachers choosing to engage with ESD is small. In particular, too much emphasis on ESD being teacher led is seen as a barrier as it does not recognise that responsibility for ESD needs to be shared by all actors. Instead, teacher autonomy is seen as a contributing factor that allows actors to "sit on the fence" (Bjønness & Sinnes, 2019, p. 2). Therefore a high reliance on individual teachers to choose to include ESD in their teaching is seen as a major challenge for this case study school, also for ESD progression in Norway (Andresen et al., 2015; Bjønness & Sinnes 2019), and further afield (Shallcross & Robinson, 2008).

It is clear interviewed teachers had an awareness and desire to work with ESD in a holistic way, however practitioners reported that if a teacher who is driving the ESD project leaves, then the project stops. Issues concerning high turn-over of management staff was also given as to why the schools strategy to work with SD had not progressed as hoped. A myriad of reasons why practitioners felt it was hard utilise their existing ESD competency, in particular to work holistically with ESD, were given, for example; while the school's policy and individual teachers presented numerous ideas for implementing ESD, the capacity to implement these ideas were impeded by lack of ESD prioritisation and accountability. Currently, the need for improving student enrolment figures, exam preparation and the economy take precedent. While school leaders actively accept and support ESD being taken seriously, a requisite for the 'bolt on' stage (Scott, 2013), little accountability exists that ensures this actually happens. As accountability and prioritization barriers exist, the school lacks the ability to integrate ESD in a more central and move towards the next stage: the 'built in' (Scott, 2015) response to ESD. This is reflected in the school's access to ESD related CPD

[31]. While ESD competency was present in some teachers (most of which received this through the DNS[32] funded projects) it is not widespread. Instead, improving Math and Norwegian took precedent and were the focus of both internal and external CPD offerings. The lack of ESD competency and the need for more training is also reported as a barrier to implementing ESD in other studies, for example, in Borg et al.,'s (2014) study 70% of the teachers interviewed expressed the need and desire for SD related teacher training.

Also with the anticipation felt for the curricula renewal to lead the way in mandating ESD, came a certain level of inaction, with numerous actors interviewed perceived to be waiting for the new curriculum to be published before making further progress with ESD. While the current curriculum KP-06 features both a long-term goal to educate environmentally conscious people, alongside supplementary goals added in 2006 (Andresen et al., 2015), the bulk of individual schools and municipalities are not seen as choosing to develop local curricula in ways that explicitly support ESD's implementation (Sinnes & Straume, 2017). Bjønness and Sinnes (2019) also highlight a lack of tangible ESD requirements within the core curriculum. This knowledge helps explain why ESD is often perceived by practitioners as additional to and not part of the curriculum; and for this case study school further instills why, even when ESD related vision and motivation exist within the school, they cannot move past a 'bolt on' response (Scott, 2013). Also identified was a lack of C-C top down management support for implementing ESD. To elaborate, KP-06 mandated the implementation of ESD, both for ESD related goals to be instilled throughout the local curricula, and by providing flexibility for learning objectives, thus teaching methods tailored to suit the local context (Andresen et al., 2015). Despite this, a lack of top down support was reported, with the C-C currently taking a passive role in implementing ESD, with

[31] CPD = Continued Professional Development (kompetanse for kvalitet)
[32] DNS = The Sustainable Backpack (Den Naturlige Skolesekken)

targets set by local and national policy prioritising, for example, student enrolment level and budget allotments over supporting ESD implementation. Therefore, despite ample opportunity and obligation for the C-C and individual schools alike to implement ESD, Andresen et al (2015) and Bjønness and Sinnes (2019) summarise these opportunities are not seen as binding and therefore not utilised. Various ESD case studies corroborate a lack of accountability as a common barrier for example those mentioned in, Shallcross & Robinson (2008); Hargreaves (2008); Leicht (2018).

A lack of clarity on who is responsible to initiate ESD is prevalent on all levels of management. Bjønness and Sinnes (2019) similarly found; actors sitting on the fence; lacking ESD core competency goals; and teacher autonomy as contributing factors for why little top down leadership or accountability exists. Also, while the school's Deputy-head supports ESD implementation, ESD becoming a mandatory requirement was not favoured; the need to protect teacher autonomy and the aforementioned targets taking precedent over ESD voiced as reasons for this. It seems unless the the C-C shares responsibility for ensuring ESD is made accountable, addresses conflicting priorities, and protects teacher autonomy, ESD in the case study school will be limited to the 'bolt on' staged response (Scott, 2013).

Whilst social and cultural influences are not explicit focuses for this study, most participants interviewed expressed concerns over students, parents and fellow teachers' lack of motivation to work and engage with ESD, and how this is connected with the general apathetic response to working with global SD issues. Therefore, this social and cultural context cannot be ignored and warrants further research. Some of Shallcross's (2003) theory touches upon this in Chapter 4, such as the gap between espoused values and values in actions resulting in a passive attitude towards ESD. Moreover, Bjønness and Sinnes (2019) also present one central reason for the lack of motivation to work with ESD; that as ESD does not

heavily feature in the curriculum ESD is not needed for attaining a high GPA, therefore the current assessment system inhibits ESD as attaining high grades takes precedence over ESD.

Lastly, barriers concerning existing relationships with external actors was found. The case study school partners with multiple external actors who provide ESD support and funding, however due to limited time and resources to engage with ESD at the school, these external partnerships can also be seen as a barrier. For example, because external actor relationships often result in stand alone projects, this competes with the school prioritising embedding ESD internally within everyday teaching, routines and practices. Whilst this might be an unintended consequence due to a combination of factors and aforementioned barriers, the current set up shows external actor relationships reiterate ESD as an addition to the curriculum.

The majority of barriers this case study school faces are comparable to pre-existing Norwegian ESD research; Andresen et al. (2015); Bjønness and Sinnes (2019); Sinnes & Straume (2017), and individual case studies[33] which also found that Norway's current methods for promoting and implementing ESD do not allow ESD learning objectives to be met. Therefore, further scrutiny is required as the challenges found throughout the DESD (Andresen et al., 2015) have not yet been remedied and remain commonplace. The hope for the 2020 renewal to deliver in terms of aiding the effective implementation of ESD, as identified in numerous interviews is questionable, if the rate of ESD uptake throughout the DESD is a measure of what a curricula renewal generates when sustainability principles feature as a core part. While most of the findings can be presented as barriers, it is also of note that the majority can be turned around and viewed as leverages. This is an important distinction showing; while numerous barriers exist, motivated practitioners and management

[33] Laumann 2007; Raabs, 2010; Sinnes & Straume, 2017; Sundstrøm, 2016

members are committed to engage with ESD, and therefore with these barriers also comes the potential for ESD-practices to advance.

6.2. Key leverage points to consider for future ESD-practice in the case study school

Whilst it is clear integrating ESD into the whole curriculum instead of a bolt-on approach is being explored within the Norwegian Research field (Andresen et al., 2015; Sinnes & Straume, 2017) and by external actors such as DNS (Korsager & Scheie, 2015), it is unclear if the 2020 curricula renewal, even with the plan to further prioritise SD, will echo this. At present, it is also unclear to what extent the level of support schools and other actors will have to implement the changes the curriculum renewal is set to necessitate. For example; if supplementary teacher training to raise competence levels for working interdisciplinary will be made available for all teachers; or if ESD competency training will include all levels of management, both at school and C-C level, to ensure the responsibility of implementing ESD is fulfilled by not just teachers but all actors. In addition, the interpretation of what an 'interdisciplinary approach', which is seen as both innovative and one central part of promoting ESD (UNESCO 2017a), will actually entail and mandate through the curricula amendments is uncertain and under scrutiny (Bjønness & Sinnes, 2019).

However, with all this uncertainty comes potential; potential for additional support and resources to implement ESD more effectively; or potential for clearly defining the limits to what individual schools' can achieve from a bottom up approach without additional institutional support. The curricula renewal also presents an opportunity for Norway to take stock of the mounting evidence the ESD research and policy field provides that necessitates ESD to be integrated throughout the whole curriculum (as presented throughout this thesis,

such as; Mathar, 2016; Leicht et, al., 2018; Shallcross & Robinson; Wals and Benavot, 2017; Webster and Johnson, 2009).

The thesis findings identify the upcoming Norwegian 2020 curriculum renewal as a key leverage to facilitate top down support for implementing ESD more effectively in multiple ways, thus holding the potential to lift the ESD profile in the case study school even further. For example, the conflict of interest between the needs and pressure to achieve high GPA's and the exams not currently requiring ESD knowledge to achieve this, could be remedied by ensuring ESD is incorporated into existing national tests and assessment systems. In particular, for a holistic perspective that incorporates the interconnectedness of all three aspects, the social, economic and environmental dimensions of SD, to be present in the majority of core subjects and subsequent exams (Borg et al, 2014). Another potential leverage is for the curricula renewal to enable alternative forms of assessment to be used that aid and encourage implementation of ESD pedagogical approaches. As Leicht et al., (2018) presents, alternative assessment methods are needed that include innovative ways to assess students' capacity for ESD related competencies such as critical thinking, thus moving beyond the focus of traditional examinations on testing learners knowledge. For the curricula renewal to support interdisciplinary cross-curricular learning methods as ESD policy calls for (UNESCO, 2017a), flexibility, guidance and support for integrating ESD key pedagogical approaches is key. One suggestion is for the curricula renewal to ensure accountability for ESD is put in place, and from ESD competency training, via pre-existing internal self-evaluation CPD systems can be utilised and prioritised. Shallcross (2005) defines CPD, in particular reflexive methods such as action research and self-evaluation as a core part of the WIA and an essential part of progressing ESD.

A key leverage is also found concerning improving monitoring and evaluation of ESD implementation at the case study school. It is the hope that the schools involvement with *ESD in Practice* can provide this in some guise as part of their ongoing research. There is an evident need for ESD assessment systems both in Norway (Andresen et al., 2015), and further a field, for example; Leicht et, al., (2018) call for ESD assessment to be integrated into existing systems and to be improved so both standards and indicator frameworks for the ESD learning objectives can be established.

Currently priorities superseding ESD include, for example, improving grades and school attendance levels, therefore communicating why and how ESD can be a tool for improving the quality of education in general (Leicht et al., 2018), would highlight the relevance of ESD, not just for supporting the SDG 2030 agenda, but also to improving issues currently superseding ESD.

The findings showed teacher autonomy as a leverage point as it allows motivated teachers to lead the way in embedding ESD into practice if they choose. However in order to see a system wide implementation of ESD multiple actors, not just teachers, have to lead the way (Hargreaves, 2008). Therefore, while teacher autonomy should not be undermined, for the curricula renewal to have real impact, the importance of providing the necessary support systems that enable all actors, not just teachers, to be able to deliver their terms to transform ESD vision into action is critical. Hargreaves (2008) also calls for stronger ESD leadership to be fostered at all levels, and additional top down support in place that utilises competencies found in pre-existing actors. As Scott's (2013) account of the ESD staged responses define, Without the necessary leaders in place to spearhead ESD, that possess ESD competencies and determination necessary to be a contributor to transforming communities sustainably, the impact ESD focus can have in schools will be severely limited.

Other leverages include for example; developing ways to utilise the existing Student-Council system to engage students and the wider community to take a proactive role in organising how ESD can be implemented. As prescribed by Shallcross (2003) a functioning Student-Council democratically engaging not just students, but parents, teachers and multiple levels of management, is necessary if a holistic integrated approach, involving all relevant actors is the objective. Connected to the Student-Council leverage is what ESD policy (UNESCO 2017a) describe as the need to provide opportunities for learner led actions to enable students to have a voice and foster competencies related to ESD. Therefore, a key leverage is for students to have a voice in transforming the school building and grounds sustainably. By building student voices into the schools decision making process surrounding how routine and structure can be made more sustainable a key part of the WIA can be realised "Voice alone is insufficient, it has to be heard not just listened to and it has to be powerful" (Shallcross & Robinson, 2008, p. 315). This however would necessitate the C-C to reconsider the impact outsourcing services, such as the canteen, has on school's ability to implement ESD. Previously mentioned ESD case studies in Chapter four also suggest that ESD-practices via student led school improvements result in improving more than just schools' ecological footprints and provide the means for students to experience hands on the type of impact SD measures can have on their own local surroundings (Shallcross & Robinson, 2008). Essentially methods prescribed by the WIA provide ways in which current ESD approaches can be improved, teachers be better supported and numerous of the barriers overcome.

The findings show currently there is little utilisation of international ESD or SDG related teaching resources, and while other national SD related resources are utilised such as the green-shift agenda, utilising existing international resources more was seen as a leverage. By utilising existing ESD resources, in particular, teaching materials, up-to-date ESD research

and best practice examples, this could provide the school with additional avenues of information for advancing ESD implementation. For example, UNESCO based resources concerning the SDGs[34] and ESD[35], and their ASPnet[36] support network, could all provide valuable assistance and international perspectives both on a wider management level and for supporting practitioners to implement ESD directly.

Another potential leverage is to research further how the SDGs and ESD connect into and can be supported through The Norwegian Government's green-shift agenda. It is clear in terms of terminology, at least for how this school frames SD, the term green-shift is more widely used than international terminology such ESD, SD or the SDG's.

Another leverage is to consider re-defining the type of role external actors have with supporting the case study school. Despite the actions carried out so far to include school management in the ESD related external actor projects, the support offered is directed predominantly at individual teachers and seems to result in individual teachers taking a more active role in ESD that school leaders. A leverage could be to consider making it a requirement that school leaders and C-C school directors are directly involved in these external actor relationships, in particular for ESD competency training to not just be made available to, but made a requirement for all levels of management to attend. As Korsager and Scheie (2015) report, if the circumstances are right external actor projects such as DNS support have the ability to result in successful implementation of ESD and facilitate students enhancing their action competence skills. However, if these factors are not in place, as this thesis has seen, external actor relationships can lead to further compounding of the 'bolt-on' response (Scott, 2015). Therefore a key leverage lies in strengthening external actor

[34] UNESCO Education resources for SDG: https://en.unesco.org/themes/education/sdgs/material
[35] UNESCO Global Action Programme based ESD resources: https://en.unesco.org/gap/resources
[36] UNESCO Associated Schools Programme network: https://aspnet.unesco.org/en-us

relationships to ensure they support ESD being integrated into instead of an extra addition to the curriculum. If external actors can find ways to ensure the necessary circumstances are present (what Korsager & Scheie (2015) call the key-factors), the impact external actors could have in supporting the school to integrate ESD more effectively could be enhanced.

In summary, the findings and subsequent key leverages identify a need for the school to be provided, not just with the opportunity to, but also the tools and competence necessary to integrate ESD in a holistic way as called for by ESD policy (UNESCO, 2017a). If the right support is in place the hope would be for ESD to be seen as feasible instead of being perceived as an unattainable vision.

6.3. Future considerations for ESD and the WIA in Norway

This section considers the WIA in Norway in terms of advancing future ESD implementation, research, monitoring and evaluation. First 6.3.1. evaluates the WIA lens and subsequent analytical framework used in this thesis. 6.3.2. then discusses reasons why the WIA is relevant for supporting future implementation of ESD in Norway, and why supporting schools' to pilot the WIA would be beneficial both for Norway and for contributing to the progression of international ESD research. Lastly reasoning for Norway to consider ESD having a more prominent role, not just in the formal curriculum, but also within the nation's wider SDG strategy is put forward.

6.3.1 Evaluation of the WIA lens and analytical framework rubric

The thesis analytical framework (Figure 17) is a culmination of current ideas and concepts concerning ESD policy and theory that systematically cross-references a plethora of ESD information concerning how to achieve the assigned ESD objectives. It provided a way to analyse the case study school's current ESD-practices, positioning their experience alongside

benchmarks that detailed methods to achieve the ascribed ESD objectives. The WIA lens is central to this benchmarking. It was unknown if utilising the WIA, an approach not well known in Norway, to study current ESD-practices would work. On reflection, by forming the analytical framework through a WIA lens, despite its complexity, provided a methodical, easy to use framework that both connected up whilst also simplified core elements of ESD policy, theory and practice. The analytical framework provided a useful structure for both the gathering and analysis of the data. Moreover, at the time of commencing this study, it was difficult to find many pre-existing frameworks that utilised both ESD policy and a WIA lens for evaluating existing ESD-practice. However, now, as seen for example in Mogren et al., (2018) and Chopin et al., (2018) the WIA is being utilised in other research studies. Therefore the potential is recognised for building upon these studies collectively to form, for example, a recognised and universally available analytical framework. Consequently, the analytical framework, and in more general terms the WIA lens, is put forward as a comprehensive way to research, monitor and evaluate ESD implementation (Shallcross, 2005) to be considered for future ESD research, monitoring and evaluation in Norway.

6.3.2. Considering the WIA for supporting future implementation of ESD in Norway

As Chapter 4 presented, the WIA for implementing ESD is recognised as providing viable methodologies to ensure students today are given the education, tools and values needed to transform societies sustainably (Hargreaves 2008). For this thesis the WIA lens provided an effective framework for assessing the case study schools progress with implementing ESD, it also pointed towards potential leverages highlighting how ESD implementation can become more effective. Therefore, the WIA possesses the potential to advance ESD in the case study school and arguably, as the aforementioned literature presents, provides numerous of the attributes called for to aid the general advancement of ESD. However, efforts are still needed

to ensure the WIA can actually move beyond pilot schools towards systemic change (Hargreaves, 2008), thus the need for additional WIA based research is recognised worldwide. Also, in terms of Norway, further scrutiny is needed to determine if the WIA is actually applicable to their formal curriculum, and if the upcoming curricular renewal will facilitate this type of approach. As it stands there are "[currently] few or no examples of schools that work comprehensively with ESD in Norway" (Bjønness & Sinnes, 2019, p. 2).

It is arguable that if Norway chooses, the means and opportunity to engage with and pioneer ways in which the WIA can be implemented on a systemic scale are present. Therefore, this thesis argues that allocating Norwegian schools the resources and support necessary to pilot the WIA would be beneficial to the advancement of international ESD research; and for advancing ESD nationally, by providing ways to both measure and remedy the types of ESD barriers this thesis and other Norwegian based studies such as Andresen et al,. (2015) and Bjønness and Sinnes (2019) present. One way for Norway to consider utilising the WIA for implementing ESD would be to organise a nation wide piloting of the WIA across a variety of education institutions, that would include a collective agenda in mind to strengthen links between relevant research institutions, schools and external actors. Part of this could be identifying schools that have beneficial attributes[37] to pilot the WIA. A search for such schools could take place through collaborating with existing ESD research institutions and networks such as DNS, Sustain (miljolare) and Eco-school's.

While this case study parameters covered just one level of the formal education sector the need for ESD to encompass all ages and all forms of education, formal, non-formal and informal is well known (Leicht, et al., 2018). Therefore another consideration is to utilise the development of ESD in formal education to become a catalyst for inspiring all forms of ESD

[37] For example finding a school where a commitment to work with ESD has been made by all levels of management and where some pre-existing ESD competencies are already in place amongst some teachers

processes within communities and a variety of sectors. Whilst this is beyond the scope of this thesis both the thesis findings and the findings presented by Bjønness and Sinnes (2019) highlight various actors associated with ESD take a passive role towards leading ESD implementation. Therefore, in order for ESD to be more effective proactive engagement is needed from all actors and for ESD to be considered beyond the realms of the formal school setting: Both within the realm of a school and in the wider societal sense, that sees ESD situated more prominently within a wider integrated SD strategy "… that includes changes in governance, legislation, research, financing, and regulation towards greater environmental sustainability" (Wals & Benavot, 2017, p. 405). Therefore this thesis calls for Norway to consider ESD and the WIA on national, county and municipality levels; to bring ESD to the forefront of their SD national agenda, thus enabling an integrated systemic approach to sustainability that values and prioritises ESD.

Chapter Seven: Conclusions

Although ESD principles have existed in Norway's formal curriculum since the 1970's, little evidence of ESD being effectively implemented or in widespread use is found (Sinnes & Straume, 2017). Both prominent barriers and key leverage points identified in the findings shed light on what a Norwegian school experiences when implementing ESD. At the case study school ESD features as a dominant vision, with various attributes such as the motivation to engage with ESD existing. However, numerous barriers were identified limiting ESD's capacity to be taught holistically, for interdisciplinary methods to be utilised, or for sustainability transformations to be integrated within the school's everyday routines and practises. Consequently the majority of practitioners interviewed reported a sense of frustration and inaction. Barriers identified included outsourcing the management of school

grounds and buildings. Compartmentalising management like this leaves little room for the school to holistically implement SD transformations, and consequently current methods for implementing ESD fall short of achieving the UNESCO ascribed ESD learning outcomes (UNESCO, 2017a). A holistic approach to ESD, as ascribed by ESD policy and the WIA, is made possible when all levels of management and relevant external actors are engaged and on board in supporting internal implementation of ESD. While motivation and the ability for practitioners to integrate ESD into their practice should not be undermined, these attempts are limited unless top down support and accountability is embedded. Other studies, such as Mogren et al., (2018) also show effective ESD implementation is seen in schools when proactive leadership is in place at the initiating stage. As with many other schools motivated to implement ESD, without systems in place to encourage and provide opportunity for ESD to be practiced as well as taught, the case study school is limited in the extent to which ESD can be fully integrated. Consequently, without additional support it is extremely difficult for the case study school to have anything more than a 'bolt on' staged response to ESD (Scott, 2015). In turn, the methods attributed to the WIA, from both a policy (UNESCO, 2017a) and theory (Shallcross & Robinson, 2008) perspective are not seen as commonplace. While the upcoming curricula renewal shows Norway wanting to prioritise SD as an interdisciplinary topic (UDIR, 2019), it is not yet clear to what extent ESD learning objectives and key pedagogical approaches will feature. Essentially it is uncertain if the amendments will see ESD embedded into binding learning objectives, or if the changes will be enough to ensure ESD can be implemented more effectively than shown by recent ESD reports and this thesis (Andresen et al., 2015; Bjønness & Sinnes, 2019).

The findings showed that most key leverages identified concerning the potential to advance the case study school's ESD-practices were connected to external wider issues. For

example, Norway's 2020 curricular renewal has the potential to ensure the role of ESD becomes explicit in the national curriculum, which would in turn impact the case study school's capacity to advance ESD-practices. Also if the C-C and Municipal leaders take a more active role in facilitating ESD implementation this could provide the guidance, support and further knowledge needed to ensure ESD is implemented effectively. Another leverage calls for all actors and levels of management to better utilise existing international ESD resources and networks such as UNESCO provide. This leverage extends to Norway's national SD strategies such as green-shift and the nation's own SDG agenda to also become better aligned with international ESD resources. Also, for ESD competency training to become embedded into all Norway's teacher training and CPD courses, and for this type of ESD competency training to extend all relevant ESD actors, including management at school, regional and national levels. Utilising pre-existing internal CPD systems that include self-evaluation as a strategy to focus on ESD is another key leverage.

Lastly, one leverage identified calls for an evaluation into the impact partnerships with ESD related external actors has on ESD's ability to embed into the schools' everyday practices. For example, whilst external support schemes offer valuable and necessary support for implementing ESD related projects, this support is predominantly for teachers. This thesis identified, unless externally supported ESD projects have proactive support and accountability provided by school leaders, these external commitments can take limited time and resources away from implementing ESD in a holistic, internally embedded way.

The findings indicate that implementing ESD is complex and unique to the school's context, with no 'one size fits all' answer to implementing ESD, as Leicht et al., (2018) describes, so much relies on the localised nature, community setting and context of the school. However, numerous commonalities alluding to the issues and barriers explored in this study's

findings can also be found in other Norwegian ESD research studies, for example those mentioned in Andresen et al., (2015) and findings from Bjønness and Sinnes (2019). The same can be said in countries that share equivalent pedagogical approaches and formal curriculum models, for example, similar results are found in Swedish based research (Mogren et, al., 2018).

In terms of future ESD research this thesis calls for the WIA lens and corresponding thesis analytical framework to be explored further as an ESD benchmark that can support Norwegian schools' efforts in implementing ESD more effectively. In terms of future ESD-practice, the WIA can enable all relevant actors to explore why and how a holistic approach to ESD can systematically be achieved. By advocating the importance of all actors concerned with ESD policy, research and practice to take a proactive role, to collaborate with and learn together, the gaps and barriers identified in this case study can be minimised.

To conclude, this thesis asks Norway to consider prioritising ESD as a central tool to ensure all actors and levels of society are engaged in exploring how the nation can effectively transform both social and economic systems sustainably. It is the hope that Norway's curricula renewal, and national SDG 2030 agenda, will recognise and utilise ESD's role for teaching and meeting the need for a resilient and sustainable Earth System that upholds safe planetary boundaries (Kapitulčinová et al., 2017; Steffan et al., 2015). As a country recognised globally for their commitment to SD, Norway, possesses the environmental, social, political and economic means to lead the way in numerous SD advancements. As ESD is seen as a key instrument in achieving SD, this thesis argues that Norway also possesses the means to be at the forefront of advancing ESD; in terms of leading education reform and transformation, and by increasing their contribution to the international fields of ESD research and policy.

References

Andresen, M. U., Høgmo, N., & Sandås, A. (2015). Learning from ESD projects during the UN Decade in Norway *Schooling for Sustainable Development in Europe* (pp. 241-255): Springer.

ASPnet. (2019). Climate Change Education. Retrieved November, 2, 2019, from https://aspnet.unesco.org/en-us/climate-education-education

Berg, B. L., & Lune, H. (2012). *Qualitative Research Methods for the Social Sciences.* Eighth Edition.

Bjønness, B., & Sinnes, A. T. (2019). Hva hemmer og fremmer arbeidet med Utdanning for Bærekraftig Utvikling i videregående skole? *Acta Didactica Norge, 13*(2), Art. 4, 20 sider.

Borg, C., Gericke, N., Höglund, H. O., & Bergman, E. (2014). Subject-and experience-bound differences in teachers' conceptual understanding of sustainable development. *Environmental Education Research, 20*(4), 526-551.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology, 3*(2), 77-101.

Broman, G. I., & Robèrt, K.-H. (2017). A framework for strategic sustainable development. *Journal of Cleaner Production, 140*, 17-31.

Bryman, A. (2016). *Social research methods*: Oxford university press.

Chopin, N., Hargis, K., & McKenzie, M. (2018). *Building Climate-Ready Schools in Canada: Towards Identifying Good Practices in Climate Change Education*. Retrieved from Saskatoon, Canada.

Hargreaves, L. G. (2008). The whole-school approach to education for sustainable development: From pilot projects to systemic change. *Policy & Practice-A Development Education Review (6)*.

Helliwell, J., Layard, R., Sachs, J. (2019). *World Happiness Report 2019*. New York. Retrieved November 8, 2019, from https://worldhappiness.report/ed/2019/

Kapitulčinová, D., AtKisson, A., Perdue, J., & Will, M. (2017). Towards integrated sustainability in higher education – Mapping the use of the Accelerator toolset in all dimensions of university practice. *Journal of Cleaner Production*. https://doi.org/10.1016/j.jclepro.2017.05.050

Kopnina, H. (2014). Revisiting education for sustainable development (ESD): Examining anthropocentric bias through the transition of environmental education to ESD. *Sustainable development, 22*(2), 73-83.

Korsager, M., Scheie, E. (2015). *Nøkkelfaktorer for utdanning for bærekraftig utvikling – et eksempel fra en norsk ungdomsskole*. Retrieved November 28, 2019 from https://www.natursekken.no/c1187995/artikkel/vis.html?tid=2102116

Kumar, S., Kumar, N., & Vivekadhish, S. (2016). Millennium development goals (MDGS) to sustainable development goals (SDGS): Addressing unfinished agenda and strengthening sustainable development and partnership. *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine, 41*(1).

Laumann, K. (2007). *The Missing Story: Education for Sustainable Development in Norway.* Master thesis, Centre for Development and the Environment, University of Oslo.

Leicht, A., Heiss, J., & Byun, W. J. (2018). *Issues and trends in education for sustainable development* (Vol. 5): UNESCO Publishing.

Mathar, R. (2016). Chapter 5. Global Development Education/ ESD - a task for the whole school. In T. Stukenberg (Ed.), *Curriculum Framework, Education for Sustainable Development - A contribution to the Global Action Programme. Education for Sustainable Development (Translation of German edition)* (pp. 401-419). Germany Bonn: Engagement Global gGmbH.

Mogren, A., Gericke, N., & Scherp, H. Å. (2018). Whole school approaches to education for sustainable development: a model that links to school improvement. *Environmental Education Research*, 1-24.

Norwegian Gov. (2017). *The government forwards a strategy for green competitiveness*. Retrieved October 5, 2018, from https://www.regjeringen.no/en/aktuelt/the-government-forwards-a-strategy-for-green-competitiveness/id2575358/

Norwegian Gov. (2018). *Fornyer innholdet i skolen* [Press release]. Retrieved November 28, 2019, from https://www.regjeringen.no/no/aktuelt/fornyer-innholdet-i-skolen/id2606028/?expand=factbox2606068

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods, 16*(1), doi:10.1177/1609406917733847

OECD. (2019). *Education at a Glance 2019: OECD Indicators*. Paris OECD Publishing. Retrieved November 4, 2019, from https://www.oecd-ilibrary.org/education/education-at-a-glance-2019_f8d7880d-en

Pauw, J. B. D., Gericke, N., Olsson, D., & Berglund, T. (2015). The effectiveness of education for sustainable development. *Sustainability, 7*(11), 15693-15717.

Sachs, J., Schmidt-Traub, G., Kroll, C.,, & Lafortune, G., Fuller, G. (2018). *SDG Index and Dashboards Report 2018.* New York: Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN). Retrieved September 4, from https://www.sdgindex.org/reports/sdg-index-and-dashboards-2018/

Scheie, E. (2017). *Les mer om Den naturlige skolesekken.* Retrieved from https://www.natursekken.no/c1187995/artikkel/vis.html?tid=2102111

Schreiber, J.-R., & Siege, H. (2016). Curriculum Framework, Education for Sustainable Development - A contribution to the Global Action Programme. Education for Sustainable Development. In T. Stukenberg (Ed.), *Translation of the German edition* Germany Bonn: Engagement Global gGmbH.

Scott, W. (2013). Developing the sustainable school: Thinking the issues through. *Curriculum Journal, 24*(2), 181-205.

Scott, W. (2015). Education for Sustainable Development (ESD): A Critical Review of Concept, Potential and Risk *Schooling for Sustainable Development in Europe* (pp. 47-70): Springer.

Shallcross, A. G. (2003). *Education as second nature: deep ecology and school development through whole institution approaches to sustainability education.* Manchester Metropolitan University.

Shallcross, T. (2004). School development through whole school approaches to sustainability education: The SEEPS (Sustainable Education in European Primary Schools) project. Manchester Metropolitan University.

Shallcross, T. (2005). Whole school approaches to education for sustainable development through school-focused professional development (The SEEPS project). *Education for a Sustainable Future*.

Shallcross, T., & Robinson, J. (2007). Is a decade of teacher education for sustainable development essential for survival? *Journal of Education for Teaching, 33*(2), 137-147.

Shallcross, T., & Robinson, J. (2008). Sustainability education, whole school approaches, and communities of action. In B. J. J. N. Alan ReidBjarne, Venka Simovska (Ed.), *Participation and Learning - Perspectives on Education and the Environment, Health and Sustainability* (pp. 299-320): Springer.

Sinnes, A. T., & Straume, I. (2017). Bærekraftig utvikling, tverrfaglighet og dybdelæring: fra big ideas til store spørsmål. *Acta Didactica Norge-tidsskrift for fagdidaktisk forsknings-og utviklingsarbeid i Norge, 11*(3).

Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., . . . Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science, 347*(6223). doi:10.1126/science.1259855

Sterling, S. (2004). Higher education, sustainability, and the role of systemic learning *Higher education and the challenge of sustainability* (pp. 49-70): Springer.

Sundstrøm, E. M. (2016). *Utdanning for bærekraftig utvikling (UBU) fra et lærerperspektiv. En studie av naturfaglæreres perspektiv og undervisningspraksis av UBU.* UiT Norges arktiske universitet.

Swim, J., Clayton, S., Doherty, T., Gifford, R., Howard, G., Reser, J., . . . Weber, E. (2009). Psychology and global climate change: Addressing a multi-faceted phenomenon and set of challenges. A report by the American Psychological Association's task force on the interface between psychology and global climate change. *American Psychological Association, Washington*.

UDIR. (2018). *Elevtall i videregående skole – fylker og skoler.* Retrieved August 17, from https://www.udir.no/tall-og-forskning/statistikk/statistikk-videregaende-skole/elevtall-i-videregaende-skole/elevtall-fylker-og-skoler/

UDIR. (2019). *Core Curriculum - Interdisciplinary topics.* Retrieved November 26, 2019, from https://www.udir.no/lk20/overordnet-del/prinsipper-for-laring-utvikling-og-danning/tverrfaglige-temaer/?lang=eng

UN. (2015). Transforming our world: The 2030 agenda for sustainable development. *United Nation General Assembly 70 session*.

UN. (2016). *Laying the foundation to measure sustainable Development Goal 4* (ISBN 978-92-9189-197-9). http://uis.unesco.org/sites/default/files/documents/laying-the-foundation-to-measure-sdg4-sustainable-development-data-digest-2016-en.pdf

UN Norway. (2016). *Norway Voluntary National Review 2016. The 2030 Agenda: A roadmap for national action and global partnership*. https://sustainabledevelopment.un.org/content/documents/10692NORWAY%20HLPF%20REPORT%20-%20full%20version.pdf

UNESCO. (2014). UNESCO roadmap for implementing the Global Action Programme on Education for Sustainable Development. https://unesdoc.unesco.org/ark:/48223/pf0000230514

UNESCO. (2016). Getting Climate-Ready - A GUIDE FOR SCHOOLS ON CLIMATE ACTION. In S. a. C. O. United Nations Educational (Ed.), *UNESCO* (pp. 19). Paris UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000246740

UNESCO. (2017a). *Education for Sustainable Development Goals: learning objectives.* https://www.unesco.de/sites/default/files/2018-08/unesco_education_for_sustainable_development_goals.pdf

UNESCO. (2017b). *Good practice in Education for Sustainable Development (ESD) in the UK: Case Studies*. https://www.unesco.org.uk/wp-content/uploads/2017/04/UKNC-Case-Study-1-FINAL.pdf.

UNESCO. (2018). What is ESD? *Education for Sustainable Development - What is ESD?* Retrieved from February 4th, 2018 https://en.unesco.org/themes/education-sustainable-development

Van Poeck, K., & Lysgaard, J. A. (2016). The roots and routes of environmental and sustainability education policy research. *Environmental Education Research, 22*(3), 305-318.

Wals, A. E. (2012). *Shaping the education of tomorrow: 2012 full-length report on the UN decade of education for sustainable development*.

Wals, A. E. (2015). Social learning-oriented capacity-building for critical transitions towards sustainability *Schooling for sustainable development in Europe* (pp. 87-107): Springer.

Wals, A. E., & Benavot, A. (2017). Can we meet the sustainability challenges? The role of education and lifelong learning. *European Journal of Education, 52*(4), 404-413.

WCED. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. Retrieved January 7, 2018, from http://www.un-documents.net/our-common-future.pdf

Webster, K., & Johnson, C. (2009). *Sense and Sustainability*. UK Terra Preta

Appendix 1
Interview guides for school interviews - Rosalie Mathie, 2018

Teacher focus group interview guide 2018

Teachers background

1. What subjects do you teach, please tell us a little about your background?
2. Can you tell what education for sustainable development means to you in your teaching?
3. The Norwegian curriculum states that schools should educate environmentally conscious people. Is this of importance for you as a teacher? Why? Why not?

General questions

4. Can you give an overview of past and present ESD 'projects' 'focus' at the school?
5. In particular tell me about the schools green-shift strategy
    a. How is the school integrating ESD into the curriculum since the commencement of the 2016-2020 action plan?
    b. Was there a focus before making the strategy in 2015? Did you have focus on ESD before that? If so what did it look like?
    c. What would you say there were major changes aimed at and achieved through the action plan?
    d. Since the strategy was adopted the leadership has been changed. How it has been followed up by the new leadership?
6. Can you describe to me how continued professional development (CPD) is organised in the school?
    a. Evaluation of projects
    b. Does a self- evaluation format exist in the school?
    c. Teacher support/training… for integrating ESD

Teachers perspective - ESD - current methods

7. What current ways do you currently work with ESD?
    a. How do you work with ESD in management?
    b. How do you work with ESD as a department head?

   c. Can you give examples?
   d. Do you have teaching material or current green-shift plans you can share with me?
   e. What were you most satisfied with in these projects?
   f. What type of challenges have you experienced?
8. If not yet discussed explicitly ask – how do you find working in an interdisciplinary approach?
   a. What does this mean to you?
   b. Can you give examples?
   c. Do you facilitate interdisciplinary work and if so - How? Why?
9. Is there any specific ESD guidelines or resources you follow/use to teach ESD?
   a. *Do you use the SDG's in your teaching?*
10. Do you think the way the school currently work with ESD is replicable and sustaining long term?
11. What opportunities and challenges do you see at the school when working with ESD?
   a. Teachers' agency - what role/freedom do you think teachers could have to implement ESD vs the role of the leadership?
12. Do you, as a teacher, feel supported and competent to bring ESD into your teaching?
   a. Do you have any suggestions as to how you could feel/be better supported? Why/why not?
   b. Do you think management has a role to play in facilitating you as a teacher to work with education for sustainable development? And if so - Why? How?
   c. What type of challenges do you face as a teacher when integrating ESD?
   d. Do you find it a challenge to develop the curriculum in line with ESD?
   e. Does ESD interest you?

WIA related questions using the WIA mind map as a prompt:

13. This Mind map shows the type of **holistic action orientated approach** that can result in schools meeting the Education for Sustainable Development Goals Learning Objectives
   a. Can you tell me if the school practice any of these WIA aspect?
   b. Does this approach interest you as a teacher?

c. Do you think the WIA would be a suitable approach for the school to pursue? Why? Why not? And if so is there any specific aspect you can foresee as a strengths/weakness/challenge?
d. Self-evaluation tools – if time talk about self-evaluation and CPD further in relation to WIA.

Interview guide 2018 – Deputy-head

Deputy-head background:

1. Please tell us a little about your background. Can you tell me about the work responsibilities you have and how long have you worked at the school?
2. Can you tell me what Education for Sustainable Development (ESD) means to you?
    a. Has becoming being vice principal changed your perspective on this in terms of priorities?
    b. How do you feel ESD is perceived by the staff at the school?

Green-shift:

3. Can you tell me more about the – green-shift strategy and how management are planning to work with this over the next two years?
    a. What has and has not worked over the past 2 years since the strategy was created?
    b. Now the leadership has changed, have the plans for following up the strategy changed?
    c. If not answered ask specifically - Are there any plans to make ESD an obligatory part of teaching?

UBU i praksis:

4. The school is part of the 'UBU i praksis' research, can you tell me what this means to you?
5. What opportunities and challenges do you see for the school when working with ESD? Can you talk about any key barriers of successes you have experienced?
6. How important do you think ESD currently is for the schools management?
    a. What focus at school are currently prioritised above ESD?
7. What is important to the school for the future relationship with 'UBU i praksis'?
    a. What do you want out of this partnership and has this changed from the original plan? How does this fit with being a university school?
    b. There has been talk about the school receiving a 'UBU i praxis' sign to display at the school. What would a sign like this signify to the school? and how would this sign be reflected in everyday school life?

ESD and County Council:

8. As I understand it is County Council education department who have officially signed to be part of the UBU I praksis research. Where do you think the responsibility lies with initiating and progressing further with ESD in the school?
    a. Does the responsibility lie more with the CC or with the schools management?
    b. Who should take the lead?
9. What type of autonomy do you have to implement ESD/UBU at the school?
    a. As a school? As part of the management team?
    b. As a department head? As a teacher?
    c. Would you like this to be different?

Future of ESD:

10. What does 'tverrfaglig' interdisciplinary mean to you?
11. how do you find working and facilitating the staff to work in an interdisciplinary approach at the school?
    a. Do you facilitate interdisciplinary work and if so - How? Why?
12. Do you think the way the school currently work with ESD is replicable and sustaining long term?
13. Is there any specific ESD guidelines or resources you currently follow/use to teach ESD?
    a. *Do you use the SDG's in your teaching?*
    b. *Have you heard of the Whole School/institution Approach that is being promoted by UNESCO*

Whole Institution Approach:

WIA related questions using the WIA mind map

14. This Mind map shows the type of **holistic action orientated approach** that can result in schools meeting the Education for Sustainable Development Goals Learning Objectives:
    a. Do you think the WIA would be a suitable approach for the school to pursue? Why? Why not?
    b. And if so is there any specific aspect you can foresee as a strengths/weakness/challenge?
15. The WIA is a way to engage the whole school with ESD, to go on a journey towards sustainability together. Could you see this approach as a way to improve the school?

16. **Self-evaluation tools** – Discuss self-evaluation and CPD further in relation to WIA.
    a. Can you describe to me how continued professional development (CPD) is organised in the school?

b. What do you think of CPD and teachers self-evaluation (Aksjonslæring) as a way for teachers to engage with ESD?

Appendix 2
ESD in Practice Interview guides for 2017 interviews

Translated into English from Norwegian - Rosalie Mathie

Teacher focus group interview

1. The curriculum states that the school is obliged to educate environmentally conscious people. How do you work with this at the school today?

2. Can you tell us what education for sustainable development means to you in your teaching

3. Do you have experience with teaching for sustainable development? Possibly what?

4. What do you consider the most important challenges your students will face in the future?

5. What do you do to prepare students to meet the future?

6. How can management facilitate you as a teacher to work with education for sustainable development?

7. Interdisciplinarity is central to getting to UBU. How is it facilitated for interdisciplinary work at this school today? (time, space, resources incl. knowledge).

8. How do you follow up the environmental focus in your daily operations? Environmentally certified? Other stuff?

9. An important part of UBU is that students develop their opportunities to influence the world through choices, dedication and personal actions. How do you think this competence can be developed in the students?

10. What opportunities and challenges do you consider incorporating UBU at this school?

11. What do you want to get out of school co-operation with teacher education at NMBU to develop the school's UBU focus?

12. How can the cooperation take place?

13. Describe how the school you work in is working with UBU in 5 years?

Head teacher and management focus group interview

1. The curriculum states that the school is obliged to educate environmentally conscious people. How do you work with this at the school today?

2. Can you tell what Education for Sustainable Development (ESD) means to you?

3. What do you consider the most important challenges your students will face in the future?

4. What do you do at this school to prepare students to meet the future?

5. How can management facilitate work with education for sustainable development?

6. Interdisciplinarity is central to implementing ESD. How do you facilitate interdisciplinary work at this school today? (time, space, resources including knowledge).

7. How do you follow up the environmental focus in your daily operations? Environmentally certified? Other stuff? How do you think it can be followed up?

8. An important part of ESD is that students develop their opportunities to influence the world through choices, dedication and personal actions. How do you think this competence can be developed in the students?

9. What do you want to get out of school co-operation with teacher education at NMBU to develop the school's ESD focus?

10. How can the cooperation take place?

11. Describe how the school you work in is working with ESD in 5 years?

County Council (C-C) focus group interview

1. What role does the C-C's have regarding the schools in the county. And in particular the interviewees specific job-role

2. Can you say something about the C-C's role in supporting the school's commitment to educating environmentally conscious people? Training and operation. Green flag and environmental lighthouse accreditation schemes?

3. Can you tell us what education for sustainable development means to you?

4. What do you consider to be the most important challenges students will face in the future?

5. What do you consider to be the most important challenges students face in connection to sustainable development?

6. What are the most important things students need to learn to meet these challenges?

7. What do you do at the C-C to support schools to work with education for sustainable development?

8. How do you follow up the environmental focus in the school's operation? Environmental certification? Anything else? How do you think it can be followed up?

9. What role does the C-C's have in R & D (research and development) work in schools?

10. An important part of ESD is that students develop their opportunities to influence the world through choices, dedication and personal actions. How do you think this competence can be developed within the students?

11. What do you envision for the partnership between the C-C's, the schools and teacher education at the university for developing the school's ESD focus?

12. How can this cooperation/partnership take place?

13. Describe how the schools in your municipality will work with UBU in 5 years?

Appendix 3

A historical perspective of education in relation to People and Planet

Source: Copyright Wals & Benavot, 2017, p. 406. Originally adapted from Wals (2012)

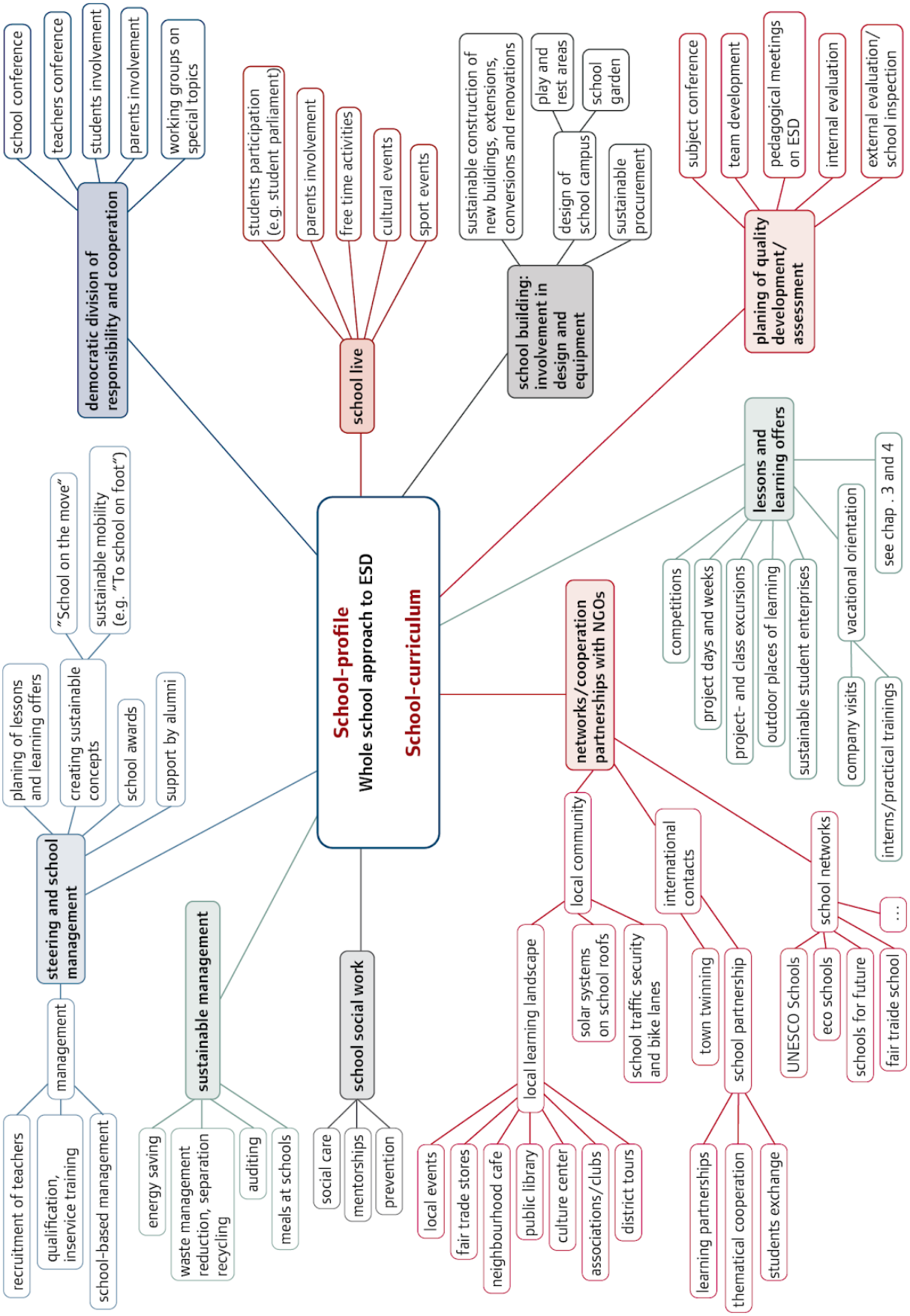
	Nature Conservation Education (NCE)	Environmental Education (EE)	Sustainability Education (SE)	Environmental and Sustainability Education (ESE)
Starting period	Late 19th century, early 20th century	Late 1960-ties, early 1970-ties	Early 1990-ties. end of the DESD (2014)	Present
Alain focus	Connecting with nature, understanding web-of-life, protecting species, raising awareness, knowledge and understanding	Raising environmental awareness about pollution of water, soil and air. (note: there are forms of critical EE that resemble the focus and impact of SE)	Increasing citizen engagement, participation in sustainable development issues and increasing their understanding of the connections between environment, economy, culture and ecology and how today's actions affect future generations	As under SE but also: connecting with place and the non-human world (deepening of relations) as well as attention for both agency (learning to make change) and the critique and transgression of unsustainable societal structures. Global citizenship and local identity.
Intended impact	Ecological literacy, societal support-base for nature conservation through national parks	Changing individual environmental behaviors, developing agency and societal support for environmental legislation	A more holistic or integrated approach of dealing with issues around water, food, energy, poverty biodiversity in governance, education, business.	A transition towards a more relational way of being in the world and a society based on values and structures that make sustainable living the default.
Examples	Visitor centers in National Parks, Public awareness campaigns, nature programs in schools, school gardening	Environmental education centres in cities. Public awareness campaigns, school curricula, teacher training	Multi-stakeholder platforms focusing on sustainable development issues. Whole institution approaches to sustainability. Corporate Social Responsibility	Brokering learning and engagement within transitions: Intentional communities such as eco villages, transition towns, whole school approaches, local food movements, shared economies, cradle-to-cradle design.

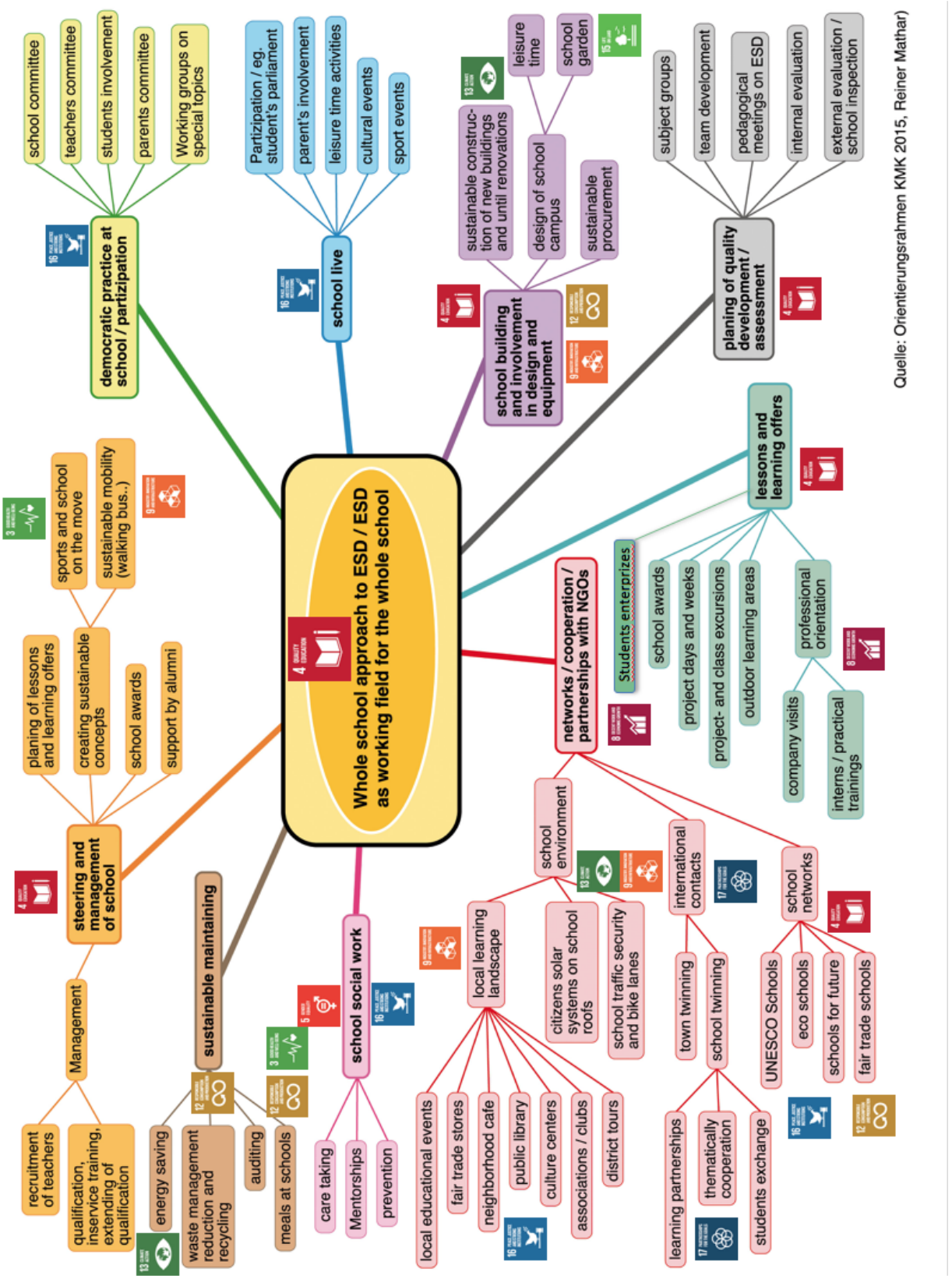
Appendix 4

School-profile Whole School approach to ESD mind-map by Reiner Mathar

Source: Mathar, 2016, p. 403. Chapter 5 of Curriculum Framework - Education for Sustainable Development. Copyright Engagement Global gGmbH

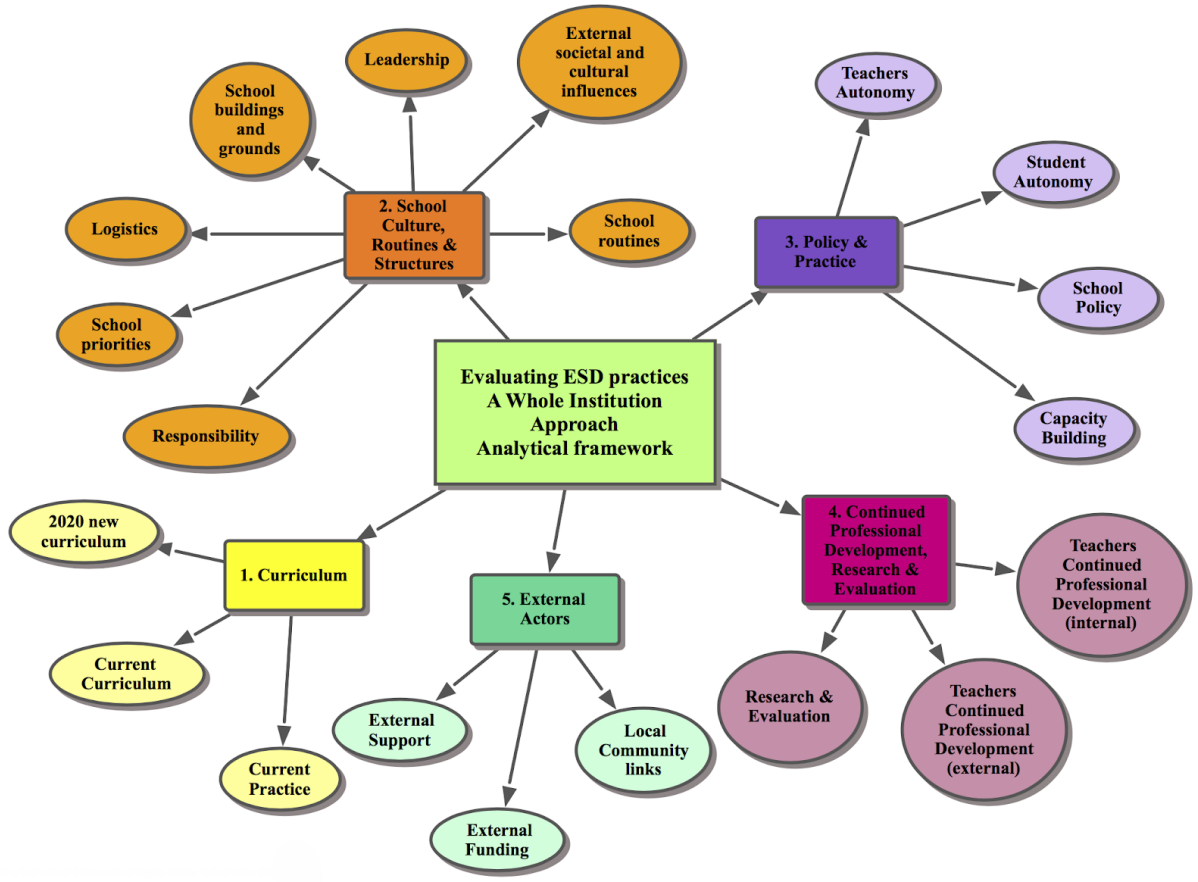
A revised version of the mind-map linking the WIA to the SDGs is also included
Source: R Mathar, Personal communication, 11 December 2019


School-profile
Whole school approach to ESD
School-curriculum
democratic division of responsibility and cooperation
school conference
teachers conference
students involvement
parents involvement
working groups on special topics
school live
students participation (e.g. student parliament)
parents involvement
free time activities
cultural events
sport events
school building: involvement in design and equipment
sustainable construction of new buildings, extensions, conversions and renovations
design of school campus
play and rest areas
school garden
sustainable procurement
planing of quality development/ assessment
subject conference
team development
pedagogical meetings on ESD
internal evaluation
external evaluation/ school inspection
lessons and learning offers
competitions
project days and weeks
project- and class excursions
outdoor places of learning
sustainable student enterprises
vacational orientation
company visits
interns/practical trainings
see chap . 3 and 4
networks/cooperation partnerships with NGOs
local community
local learning landscape
local events
fair trade stores
neighbourhood cafe
public library
culture center
associations/clubs
district tours
solar systems on school roofs
school traffic security and bike lanes
international contacts
town twinning
school partnership
learning partnerships
thematical cooperation
students exchange
school networks
UNESCO Schools
eco schools
schools for future
fair traide school
...
steering and school management
planing of lessons and learning offers
creating sustainable concepts
"School on the move"
sustainable mobility (e.g. "To school on foot")
school awards
support by alumni
management
recruitment of teachers
qualification, inservice training
school-based management
sustainable management
energy saving
waste management reduction, separation recycling
auditing
meals at schools
school social work
social care
mentorships
prevention


Whole school approach to ESD / ESD as working field for the whole school
democratic practice at school / partizipation
school committee
teachers committee
students involvement
parents committee
Working groups on special topics
school live
Partizipation / eg. student's parliament
parent's involvement
leisure time activities
cultural events
sport events
school building and involvement in design and equipment
sustainable construc-tion of new buildings and until renovations
design of school campus
sustainable procurement
leisure time
school garden
planing of quality development / assessment
subject groups
team development
pedagogical meetings on ESD
internal evaluation
external evaluation / school inspection
lessons and learning offers
school awards
project days and weeks
project- and class excursions
outdoor learning areas
professional orientation
company visits
interns / practical trainings
networks / cooperation / partnerships with NGOs
Students enterprizes
school environment
local learning landscape
citizens solar systems on school roofs
school traffic security and bike lanes
international contacts
town twinning
school twinning
learning partnerships
thematically cooperation
students exchange
school networks
UNESCO Schools
eco schools
schools for future
fair trade schools
local educational events
fair trade stores
neighborhood cafe
public library
culture centers
associations / clubs
district tours
school social work
care taking
Mentorships
prevention
sustainable maintaining
energy saving
waste management reduction and recycling
auditing
meals at schools
steering and management of school
Management
recruitment of teachers
qualification, inservice training, extending of qualification
planing of lessons and learning offers
creating sustainable concepts
school awards
support by alumni
sports and school on the move
sustainable mobility (walking bus..)
Quelle: Orientierungsrahmen KMK 2015, Reiner Mathar)

Appendix 5

Thesis findings not directly discussed in the thesis: for future consideration



1. **Curriculum:**

Current Practice

The teachers in 2018 mentioned that by incorporating and involving students interested in entrepreneurship they hope it will attract more students. Additional new ways of organising lessons that would better suit an interdisciplinary approach were also discussed in the interviews[38], for example by combining a selection of the Math, Science, Technology & Research students together for weekly lessons where interdisciplinary collaborative projects will be the main aim.

2020 new curriculum

[38] In Autumn 2018, when information that the Technology & Research class was suspended information was shared regarding the geography, language, social and natural science teachers forming a team with working out how to teach interdisciplinary in a more effective as a focus.

Additional quotes showing positivity for the curricula renewal to lift ESD profile in schools:

> I think this curriculum, the green shift is a much bigger vision than you ever have seen, so the teachers will have to, it's a requirement. You can't ignore it (Deputy-head).
> Yes, it is the interdisciplinary nature of the new curricula and that you are going to spend time on deep learning and how things we do somewhere affect things elsewhere. ehh, I think that the curriculum has taken into account in every case as far as advice is, and we'll see how it gets." (Regional Schools Director)

2. **School routines and structure:**

Responsibility

The teachers interviewed often described feeling in the minority as the majority of teachers and staff members did not appear to be interested in ESD. Numerous suggestions of how to holistically embed ESD into the school were mentioned in all teacher interviews. Ideas discussed included the drive to implement ESD within core lessons and extracurricular activities to ensure ESD was seen in action and not just taught in theory. The teacher's ideas were akin with the WIA to ESD and showcased that ESD competency was present. Yet despite the evident ESD competency, the question of who would and who could take responsibility for the proposed ESD ideas, in particular if management could offer support, was identified as inhibiting these ideas coming to fruition.

Also, some of the new ideas and current ESD initiatives mentioned in the 2017 interview, no longer existed in 2018. For example, the school beehives, creating a makerspace to reuse and repair items, and eco-time, an extracurricular weekly time period to focus on ESD. The reasons discussed for these initiatives stopping were predominantly due to the teachers who set up the project no longer working at the school, or time constraints, for example, the length of the school day being shortened thus extracurricular eco themed activities were no longer possible.

School Priorities

In regard to the C-C's current priorities the findings showed that strengthening basic skills such as, information and communication technology, assessments for learning, whilst also strengthening educational leadership in the schools, currently took precedent over ESD.

Lack of planning time was also mentioned frequently as an issue impeding ESD, in particular not having enough time to plan with teachers in other departments to effectively organise working with ESD in an interdisciplinary way. It was also mentioned that due to this lack of planning time the teachers who wanted to work with ESD often did so by using unpaid

hours to plan collaborations and subsequently were often met with disinterest when trying to interest more teachers to collaborate on ESD projects; “We are still new so we have this, uh yeah, but others here, they are like, you have to calm down, we don't work for free, so it is really person dependent” (Teacher).

School Buildings and Grounds

As campus buildings were built recently (2006), various environmental building standards are adhered to, however to what extent the school building are sustainable is unknown. Yet it is clear the C-C has focused on building and retrofitting schools to a high environmental standard with the Regional Director pointing out that this is an area they have, throughout the region made progress with:

> Clearly, we have spent a lot of time and money on the design of schools. Now we are building a new school with sedum roof, so the environmental considerations are absolutely true and our MDG [green party politicians] representatives are always clear that we remember to use materials that are recyclable and stand the test of time. So, when it comes to new school buildings and especially when we restore this is entirely the case. (Regional School Director).

The perception that the school building and ways in which it did meet sustainable credentials is not communicated or utilised to teach ESD.

Leadership

Whilst the WIA is not specifically discussed or well known in Norway, it is clear, through the support of DNS, an interdisciplinary approach to ESD is highlighted as a necessary way for ESD to be taught. The teachers interviewed expressed a lack of support from management to implement ESD, in particular to approach ESD in a holistic and interdisciplinary focused way. While it is evident the school management is interested in engaging with ESD, the school’s current circumstances mean many other managerial concerns, such as the aforementioned low school enrolment numbers, result in ESD not being prioritised.

External societal and cultural influences

It was also pointed out that the lifestyle choices of families were also at odds with learning about ESD and therefore it was difficult to reach the students. The connection between apathy and inaction and therefore the need to bring ESD into multiple subjects was also made:

> The students must see they can't continue with this way of living, so it has to mean something for them. You know the students, they come from rather rich families, many of them have a big cabin cruiser in the harbour, they have cabins in the mountains at the fjord some other part of Norway, they travel a lot, so you have to reach the heart, they have to understand that they can't continue this life, it has to mean something. That's important for me as a school leader, and we have to use a lot of...not just in science but in other subjects, a lot of subjects, you have to talk about it and see the connections (Deputy-head)

School routines

The general perception from all teacher and school management interviews was that the current daily school routine makes is difficult to work interdisciplinary and to bring ESD into the everyday running of the school. For example, planning meetings (as of spring 2018) only happen within subject departments and whilst ESD is being implemented in an interdisciplinary sense via project days, these days have their limitations.

3. **Policy and Practice:**

School policy

The school has utilised the national green-shift strategy to be part of their own school strategy. Yet despite this strategy existing and many resources going into its creation in 2015/2016, as of the 2018 the teachers and Deputy-head felt it was not communicated or seen in practice within the everyday running of the school. Economic issues were named as one of the reasons why the strategy has not been utilised as intended "We are continuing this process, but there are, because of the economy we have to go a bit slower I think (Deputy-head). In addition, the aforementioned issue of low student enrolment, coupled with the impression that students are not necessarily interested in learning about ESD, were also discussed as reasons that the vision has not been realised:

> We must be sure it will increase the student applications, and if you ask me just now I am not sure that our local students think of sustainability when looking for VGS, they think about other things...But as a main vision, green vision as the one and only vision, I do not think we get enough students to the school...you have to have this vision together with something else. (Deputy-head)

One reason given for the school's current strategy concerning green-shift not being realised was the high turnover of staff. The Deputy-head, when discussing the WIA mind map (Appendix 4), whilst acknowledging the necessity for a holistic ESD approach, the WIA mind map was initially seen as overwhelming. A reason given for this response is connected to this concern that the ESD alone is not enough of a vision to interest students. Nevertheless, it was clear that the aspiration to continue with the school's current strategy was presented by old and new members of management, teachers and the C-C representatives interviewed. For example, the current Headteacher, whilst acknowledging there were numerous barriers that currently impede implementing ESD into the school, the awareness of the barriers was seen as a step in the right direction:

> Now we've had the whole management's switching within a few years, and we have a lot of work to do, like having the green-shift as an overarching aim. However, we have no recycling in school, we have a

> canteen that is not close to being green, right, and okay great, we have projects on food waste and so on, but we have a canteen that certainly has a lot of food waste... so for us ... I think at least we are aware of some of the blind spots then - at least some of them. So, we think something must happen, but we are not there yet (Headteacher).

Student Autonomy

Also teachers felt logistical and regulatory issues, for example, making money out of product they produce or having the freedom to use the equipment and tools the schools have, outside of lesson time impeded the student's autonomy.

Local community links

Various community links with local organisations already exist in the school. There are also national youth projects that also fall under the umbrella of implementing ESD due to their focus on issues connected to SD. The ESD coordinator teacher has the role of liaising with these external actors as part of her responsibilities.

The majority of the local community partnerships are associated with prior or existing DNS funded projects. The other pre-existing national project days and events include for example; operation day's work [39], a work experience scheme founded by the School Student Union of Norway in 1964, that raises money for education projects around the world whilst also teaching the students about solidarity and human rights; Young Entrepreneurship[40], a nationwide organization that works in collaboration with education, business and other actors to develop children's and youth's creativity, imagination and self-belief. The majority of the community links and projects set up currently are not integrated into the core subjects and therefore seen by students and teachers as extracurricular activities that will ultimately not count towards the student's GPA. This points to a dissonance between core curriculum goals and single subject competence aims.

External funding

Again, DNS is a major influence on the schools current ESD projects. They provide financial support to both set up the intended ESD project and provide the finances needed to ensure two teachers can attend numerous conferences and seminars that DNS arrange DNS recipients to attend each year. Lecture 2 funding also enabled the Technology and Research course to be developed which named ESD as a core part of its vision. DNS and L2 play a major role in

[39] Operasjons Dagsverk http://www.od.no/Informasjon/OD-in-English2

[40] Ungt Entreprenørskap - https://www.ue.no/Om-oss

providing a valuable funding stream for schools to engage with ESD via social and natural sciences. They are both managed by the Norwegian Centre for Science Education [41], which is in turn funded by the Norwegian Ministry of Education and Research.

This course also received the finances to buy various equipment for the course[42]. In the 1st year there were around 40 students enrolled, in the 2nd year this had dropped down to 10 students. Then as of Autumn term 2018, the course was suspended entirely. A reason a teacher gave for the course struggling was that the teacher who originally set the course up left, the school tried to recruit new students however, when student enrolment did not increase and it was not economically viable to continue to run under capacity in the 3rd year. The school hopes they can start this course again in 2019 and that recruitment will be more successful next year upon the back of smaller interdisciplinary projects they have planned, in particular the study specialisation research class they are starting which brings together students and teachers from numerous courses: Natural and Social Science, English, Norwegian and Geography.

External support

In one teacher interview, it was pointed out that the teachers who attended the DNS seminars was inconsistent, this was seen as a negative as it meant there was not always a cohesive team of teachers working with DNS. Conversely, the other teacher interviewed explained how they wanted different teachers to be part of these seminar days as they saw it as a way to inspire more teachers to be involved with implementing ESD. DNS also require the school to produce a yearly evaluation report which alongside various other report and yearly plans. Despite this taking a lot of time to complete these requirements, in particular the yearly evaluation, it was seen as a constructive requirement as it provided the school with a way to evaluate ESD, something which hasn't yet been set up internally in the school.

Also of note was two teachers describing how, even though one science teacher training course had ESD as an obligatory module, this was not thought to be the norm in Norway. In general, as the previous quote from the Deputy-head showed, ESD or SD principles had seldom been part of the teachers CPD related training courses and identified in various of the interviews as being a vital but missing part of raising ESD competencies.

[41] https://www.naturfagsenteret.no/c1405581/artikkel/vis.html?tid=1442390

[42] Funding went towards the purchase of; the bees and beehives; 5 3-d printers; Arduino Electronic platform software; underwater robot construction; and 5 drones with iPad control.

Appendix 6

School and Colleges in transition to a full learning community

Source: Copyright Webster & Johnson, 2009, p. 127

Source: 'Sense and Sustainability - Educating for a low carbon world',
Ken Webster and Craig Johnson. TerraPreta, 2008

Richard Crookes

Appendix 7

Interview Guide for Tony Shallcross preliminary research

Interview questions (interviewer Rosalie Mathie, January 2018)**:**

1. Could you describe to me how the WIA developed?
2. Over the last 15 years how would you best describe the progress with schools implementing ESD?
    a. *Can you give some examples of successes from the research you have done in schools?*
    b. Can you talk about why you have chosen to focus on the WIA over other methods?
3. Where do you think the biggest challenges are in implementing the WIA?
4. What do you think of initiatives such as Eco-schools and UN ASPnet interpretations of the WIA? How does this align with your understandings of the WIA?
4. What do you think, in terms of research, is needed to support the scaling up of the WIA? I would like to refer to your conclusions in the 2008 Participation and Learning paper.
6. What kind of support do you think is necessary to support schools in using the WIA? For example, in terms of support from local and national government, education policy, curriculum, and the local support needed within the institution?
7. In your PhD (p10) you mention how schools historically have taken a passive role in social change/action - can you talk about this further?
    a. *Can you talk more about how/if the WIA is a way of making schools more proactive in social change?*
    b. Also wanting to discuss the potential role schools can take in transforming values.
8. Can you explain to me your interest in the importance of language 'storied residences' (Cheney 1989 – PhD p22) and the theory of interpreting language? "language has to evolve to address new environmental realities" Begg (200) p21 PhD)
9. How do you look at the current development of ESD with regard to the WIA? Does it align well with the WIA? Why/Why not?
10. I am interested in how the WIA offers teachers and students the ability to simultaneously learn and proactively engage with sustainability issues and solutions. Do you see WIA as an effective way to train teachers in delivering ESD?
11. Could you discuss further your thoughts on how best to train and support teachers to bring ESD into their teaching?
12. Can you talk about the connection between John Dewey's philosophy and the WIA? You mention his philosophy in your PhD (p121, 182).

Norges miljø- og biovitenskapelige universitet
Noregs miljø- og biovitskapelege universitet
Norwegian University of Life Sciences

Postboks 5003
NO-1432 Ås
Norway