Inland Norway University of Applied Sciences

Faculty of Education

Marte Jostad

Master`s Thesis

Getting the English primary classroom climate-ready, a study of English teachers' reported mindsets and views on establishing climate-ready classrooms.

Få det engelske klasserommet klima-klart: en studie av engelsklæreres rapporterte tanker og syn på etablering av klima-klare klasserom.

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Acknowledgements

Throughout my academic journey at Høgskolen i Innlandet, I have been deeply invested in environmental issues and passionate about safeguarding our planet. As a result, I decided to conduct my thesis on this topic to understand the challenges and opportunities better. During my five years of studying, I have been frustrated by the fact that the interdisciplinary topic of *sustainable development* is not included in the English subject. I firmly believe that the English subject offers a unique opportunity to explore and teach interdisciplinary perspectives, and could be a missed opportunity not to include sustainable development in the curriculum.

Firstly, I want to express my sincere gratitude to my supervisor Heidi Silje Moen for the excellent guidance and advice given along the way.

Secondly, I would like to express my gratitude towards my family, especially my sister Ida, Emilie and my 9-month-old niece Mie for providing me with motivational breaks filled with cuddles.

Finally, I would like to thank my friends and fellow students for making these past five years memorable.

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Marte Jostad

TABLE OF CONTENTS

List of Figures

List of Tables

Abstract

Title: Getting the English classroom climate-ready, a study of English teachers' reported mindsets and views on establishing climate-ready classrooms.

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My master's thesis addresses the urgent issue of climate change. It brings together various reports that indicate that the time to prevent a climate catastrophe is rapidly running out. One of the key findings in these reports (and in my thesis) is that many educators feel unprepared to teach about climate change despite the fact that it has far-reaching implications for future generations. This lack of preparedness can be attributed to various factors, such as inadequate training and a lack of resources to deal with the challenges that will arise in the future.

The thesis explores the multifaceted and complex issues related to climate change and sustainable development in-depth and addresses possible solutions to address them. The importance of taking care of our planet by promoting sustainability and preventing climate change is increasing day by day. Respect for nature and environmental awareness are considered fundamental values in education and training. Additionally, sustainable development is one of the three interdisciplinary topics included in the curriculum renewal. However, it is unfortunate that the interdisciplinary topic of "Respect for nature and environmental awareness" is not a part of the English subject (The Norwegian Directorate for Education and Training, 2020).

English as a subject could offers learners a wide range of opportunities to enhance their knowledge and skills. The lack of inclusion in the English curriculum could deprive learners of a great opportunity to build on their knowledge of the subject matter and explore further. English, being a widely spoken language, offers an extensive range of resources, including literature, poetry, and various forms of media. These resources could be highly beneficial for learners to enhance their skills and knowledge concerning sustainability and climate change.

Norsk sammendrag

Tittel: Få det engelske klasserommet klima-klart: en studie av engelsklæreres rapporterte tanker og syn på etablering av klima-klare klasserom.

Forfatter: Marte Jostad

År: 2024

Sider: 86 (ikke medregnet vedlegg)

I masteroppgaven tar jeg for meg det økende problemet knyttet til klimaendringer og bærekraftig utvikling. Oppgaven tar for seg ulike teorier som indikerer at tiden for å forhindre en klimakatastrofe begynner å renne ut.

Et av hovedfunnene denne masteren bygger på er at mange lærere føler seg uforberedt til å undervise om klimaendringer, til tross for at det kan ha store konsekvenser for kommende generasjoner. Mangelen på kompetente lærere som kan lære bort kunnskap om klima og bærekraft kan føre til at elevene ikke evner å håndtere utfordringene knyttet til fremtiden. Masteroppgaven min utforsker disse komplekse faktorene og mulige løsninger for å jobbe mot en forbedring. Betydningen av å ta vare på planeten vår ved å fremme bærekraft og forhindre klimaendringer øker dag for dag. Respekt for naturen og miljøbevissthet anses som grunnleggende verdier i den Norske utdanning og opplæring i grunnskolen. I tillegg er bærekraftig utvikling ett av de tre tverrfaglige temaene som er inkludert i den nye læreplanen. Det er imidlertid uheldig at det tverrfaglige temaet "Respekt for naturen og miljøbevissthet" ikke er en del av engelskfaget (Utdanningsdirektoratet, 2020).

Engelsk er et fag som gir elever et bredt spekter av muligheter for å styrke sine kunnskaper og ferdigheter. Jeg vil argumentere for at fraværet av det tverrfaglige temaet *bærekraftig utvikling* i engelskfaget i læreplanen tar fra elevene en stor mulighet til å bygge videre på sin kunnskap om emnet og utforske det videre. Engelsk, et språk som blir snakket i store deler av verden, tilbyr et omfattende utvalg av ressurser, inkludert litteratur, poesi og ulike former for media. Disse ressursene er svært nyttige for elever for å styrke deres ferdigheter og kunnskaper om bærekraft og klimaendringer. Jeg håper oppgaven min kan være en tankevekker og bidra med et nyansert perspektiv på et komplekst og økende problem.

1 Introduction

This thesis will contribute to a research project, Literature, Teacher Education and the Climate-Ready Classroom (L-TECC) at Inland Norway University of Applied sciences. According to the project description, the project aims to explore how English teachers at all levels can use literary texts as a tool to teach about sustainable development and to "develop and disseminate tools that will enable educators to address climate change and loss of biodiversity specifically through literary texts" (Kleppe, Lyngstad, Moen & Sandhaug, 2023, p.1). In Norway, sustainable development is a crucial topic that is expected to be taught across various disciplines as part of the national curriculum, known as LK20. However, studies have revealed a notable gap in educators' proficiency levels when it comes to teaching this interdisciplinary subject. This is concerning given that sustainable development is a vital concept that plays a significant role in shaping the future of the pupils and our planet.

My thesis seeks to explore and map out challenges English teachers in Norway believe stand in the way of developing climate-ready classrooms. Additionally, I aim to research the methods and strategies employed by these teachers to teach environmental consciousness and promote sustainability aims among their pupils. In the study, I interviewed four primary English teachers working at four different schools in three different municipalities. As we move forward, I believe it will be crucial that we prioritize the voices of our teachers and listen to their feedback when designing classrooms that promote sustainability aims and address the challenges of climate change. By taking into consideration the valuable insights of educators, we can create learning spaces that are not only safe and supportive but also effective in preparing pupils to become responsible global citizens who can tackle the environmental issues of the future.

The issue of sustainability is quite complex and multifaceted, and it is often considered a wicked problem, as Dillon et al. (2016) have pointed out (pp.450-454, see also section 2, chapter 2. 1). Thus, my research aims to shed light on the teacher's perspectives; how they view this challenge and how they perceive their role in addressing it. My objective, therefore, is to gain a deeper understanding of the obstacles that teachers face in creating a sustainable classroom, and how they perceive their role in addressing these challenges. This research will provide insights into the knowledge, skills, and resources that teachers need to create and maintain a sustainable classroom environment.

1.1 Purpose of research

In this MA thesis, I have researched the extent to which English teachers in Norway feel competent and prepared to educate their pupils about the intricate subjects of climate change and sustainability. Through my research, I have explored teachers' beliefs regarding their level of preparedness to teach these topics. My aim was to understand if they possess the necessary knowledge to create a learning environment that reflects these concerns. UNESCO has expressed concern in their reports about the lack of confidence among teachers when it comes to teaching about climate change and sustainability, and I believe that it is essential to explore the underlying reasons for this insecurity (see section 2).

The purpose of my study is to explore Norwegian English teachers' perceptions concerning establishing climate-ready classrooms and their reported attitudes toward the task. I will delve into the perspectives of English teachers in Norway regarding their perceived ability to create classroom environments conducive to promoting climate readiness. Specifically, the study aims to explore their attitudes towards this task and identify any challenges they may face in achieving this goal. I hope to contribute to identifying potential shortcomings that can be improved to help teachers feel more confident and capable of fostering sustainable practices and attitudes among their pupils.

1.2 Research question

In the thesis I will explore what needs to be in place for English teachers to create climate-ready classrooms. To gain knowledge of Norwegian English teachers' preparedness to face the challenges of the climate crisis we are facing, I have also interviewed four teachers exploring this research question:

- How do teachers view their ability to establish climate-ready classrooms, and what are their attitudes toward the task?

1.3 Structure of the thesis

In the first chapter, I introduced my thesis, which included the research question and the purpose of my study. Chapter two discusses the previous research and theory related to the problem for educators (2.1) and towards a solution (2.2). In chapter three, I address the method used in this thesis, which is interview. Chapter four presents the results obtained from the interviews conducted with the four primary teachers who participated in the study. Chapter five discusses the findings from the interviews in relation to the previous research and theory presented in chapter two. Lastly, chapter six presents the conclusion, followed by a list of references and appendices.

2 Previous research and theory

2.1 The problem for educators

In the core curriculum it says that 'School shall help the pupils to develop an appreciation of nature so they can enjoy and respect nature and develop climate and environmental awareness.' [...]. The problems for teachers outlined in a number of UNESCO reports, however, are that many teachers do not feel confident in teaching about climate change and sustainability. 95% of the teachers participating in the survey as part of UNESCO's Learn Four Our Planet report (2021) found it essential to teach about climate change, but 40% of them reported that they needed to learn how. It is concerning that a significant number of pupils might end up being taught by teachers who lack adequate knowledge of climate change and sustainability. This can potentially put such pupils at risk of receiving substandard education and missing out on the latest developments and best practices in this field.

The UNESCO report *Getting Every School Climate-ready* (2021) also showed that only one-third felt confident in explaining the impact of climate change on their region. Moreover, the experience level of the teachers was researched:

> Experienced teachers are generally more confident in their ability to teach climate change compared to those newly entering the profession (nearly 80 per cent of those with more than 20 years of experience felt at least moderately ready to teach climate change compared with less than 60 per cent of newly recruited teachers). (UNESCOa, 2021, p. 6).

An effective way to assist less experienced teachers in teaching about sustainability and climate change is to adopt an interdisciplinary approach. This approach necessitates the integration of all subjects into the teaching method and collaboration with multiple teachers to facilitate learning from one another. By doing so, the less experienced teacher is exposed to a wide range of knowledge and can gain confidence in teaching sustainability and climate change in the classroom. Moreover, this method provides an opportunity for teachers to exchange ideas and perspectives, resulting in a more comprehensive understanding of the possibilities for teaching.

The report's findings highlight the pressing need for increased efforts to provide teachers with adequate training and resources to help pupils understand the impacts of climate change and

equip them with the skills to take action towards a sustainable future. The report also implies that while there is widespread recognition of the importance of climate change education, more support and resources are still needed to ensure that teachers are equipped with the necessary knowledge and skills to address the issue. Climate change education is defined by UNESCO as:

> […] learning to understand and actively address climate change (the global phenomenon of changes in the usual climate, temperature, precipitation and wind of the planet due to human burning of fossil fuels), climate injustice (the unequal distribution of climate change effects) and global warming and its harmful effect on biodiversity. (UNESCO, 2021, p. 17).

As teachers, we have a crucial role in educating our primary school students about climate change and its impact on the planet. We need to ensure that our classrooms are places where students can learn about the environment and develop the skills and knowledge they need to become responsible citizens. This aligns with the core value of respect for nature and environmental awareness, a fundamental principle of education as outlined by the Ministry of Education and Research in 2017 (p. 9). The core value of Respect for nature and environmental awareness covers issues relating to the environment and climate, poverty and distribution of resources, conflicts, health, equality, demographics, and education (Ministry of Education and Research, 2017, p. 9).

In September to November 2020, UNESCO conducted an online survey in English, French, and Spanish. The online survey was designed to gather insights from teachers and education leaders in primary, secondary, and tertiary education across a wide range of countries and territories. The survey was conducted over a six-week period and collected almost 1,600 responses from respondents who provided their perspectives on various aspects of education, including curriculum design, teaching methodologies, the use of technology, and student assessment. More than 72 % of the participants were teachers or principals. The remaining participants comprised other education stakeholders, including faculty members in higher education, individuals in administrative roles, and representatives from civil society organizations (UNESCOb, 2021, pp. 12-13). In the report, they write that,

> While knowledge on the progress of countries on ESD and related educational approaches has been increasing, there is still a great need for more in depth

> understanding of the extent as to which countries address sustainability issues in education – in particular with regard to two of the greatest challenges of our times, climate change and biodiversity loss. (UNESCOb, 2021, p.11).

It is encouraging to see an increased focus on ESD and related educational approaches. However, the report suggests that further in-depth knowledge is needed. Implementing a holistic, interdisciplinary approach emphasizing 21st-century skills could help the pupils acquire more comprehensive knowledge and become climate-ready.

An additional finding from the *Learn for Our Planet* survey shows that: "There is higher inclusion of environmental activities in upper secondary education (in contrast to primary and lower secondary education), apart from nature-based instruction and gardening, which were viewed as prevalent in lower grade levels, amongst the surveyed education stakeholders" (UNESCOb, 2021, pp. 29-31). After discovering that upper secondary education has a stronger emphasis on environmental activities, I realized the importance of prioritizing primary school classrooms and teachers in my research. According to a report by UNESCO (2021), just 40% of teachers feel confident in teaching the cognitive dimensions of climate change, such as its severity. What is more concerning is that only about one-fifth of them could explain how they can reduce their carbon footprint (p.6). The report indicates that a significant percentage of teachers need more confidence in teaching cognitive dimensions of climate change. This presents a concerning situation regarding education about sustainability and climate change. The survey results highlight the need for more extensive education and awareness programs to help people understand how their daily activities and choices impact the environment. As UNESCOc (2021) writes, it is essential to acknowledge the impact of our actions on the environment and take measures to reduce our carbon footprint. Failing to do so could have consequences for the planet's ecosystem and future generations (pp. 6-12).

The *Learn for Our Planet* survey of educators and experts' upcoming publication of teachers` readiness in Education for Sustainable Development (ESD) and Global Citizenship Education (GCED) shows that: "Over a third of survey respondents indicated no inclusion of environment-related content in teacher training programs" (UNESCOb, 2021, pp. 27-28). In the report "62 per cent of all survey respondents were teachers, and an additional 13 per cent were principals and usually prior teachers. Overall, 36 per cent of all respondents indicated no inclusion in either pre-service (to become a teacher) or in-service (once a teacher) training, while 30 per cent indicated that environmental issues are included in both pre- and in-service training" (UNESCOb, 2021, p. 27). The report provides an overview of environmental themes included in teacher training by theme and type of training (Figure 1).

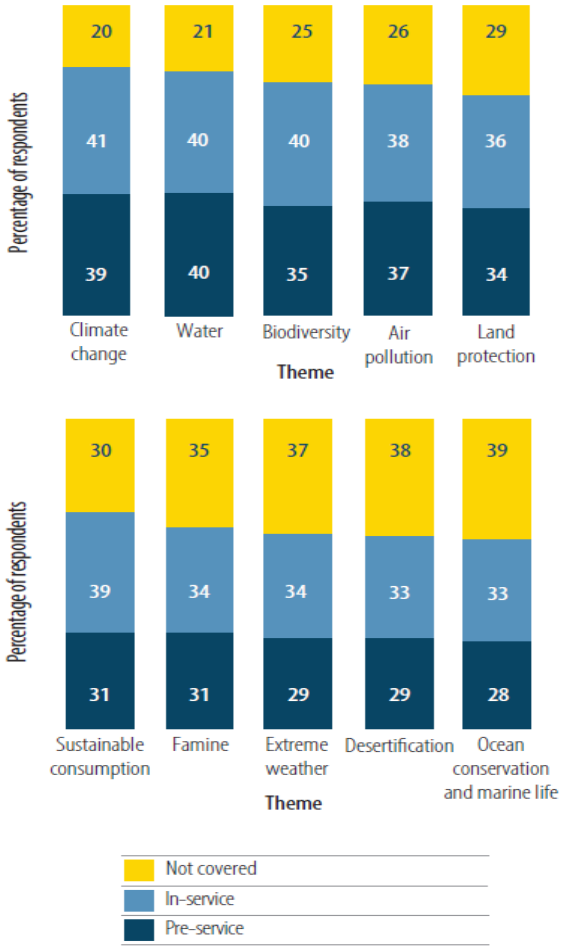


Figure 1 *Environmental themes in teacher training, by theme and type of training*, 2021 by UNESCOb. (https://unesdoc.unesco.org/ark:/48223/pf0000377362.locale=en)

Upon closer examination of the diagram, an interesting pattern emerges: 39% of respondents covered Climate Change before service, 41% covered it during service, while a surprising 20% did not cover it at all (UNESCOb, 2021, p. 27). The report lacks information on the extent to which climate change was addressed in the education of the participants who reported that it was covered. Additionally, the report indicated that less experienced teachers were less confident in teaching climate change, which could imply a need for more comprehensive coverage of the topic in general educational programs.

The UNESCO report *Teachers Have Their Say* survey displayed that “teachers want a comprehensive approach in addressing current gaps in teaching ESD and GCED (pp.54-56). While most teachers are confident in their motivations and awareness, they are generally less certain of their skills in teaching ESD and GCED, especially given their lack of professional training, teaching tools, resources, curricula and overall support from their schools and wider community" (ESD and GCED refers to the terms sustainability and climate change as used in this thesis, UNESCOc, 2021, pp. 54-56).

According to UNESCO (2021), in order to effectively teach ESD and GCED, teachers need motivation, skills, and opportunities (pp.54-56). This applies to Norwegian teachers as well. By incorporating these three factors, they can create classrooms with pupils who are better prepared to tackle climate issues. However, as UNESCOc write, if the teachers lack motivation to explore ESD and GCED, they will not pursue it even if opportunities are available. On the other hand, if teachers are highly motivated but face limited opportunities, they will find it challenging to overcome obstacles to mainstream transformative educational approaches, as revealed by the survey. Consequently, there is a risk that the efforts towards sustainability and citizenship education may not result in significant behavioral change if the education is only superficial (pp. 54-56). This highlights the essential connection between teachers, nature, and the environment. As well as the significance of teachers establishing a strong personal connection with the natural world and taking an active interest in environmental issues as suggested by the philosophy of deep ecology (see Chapter 2, section 2.2). This approach can give educators a heightened sense of motivation, which can further increase passion for their work and inspire their pupils to become responsible caretakers of the environment.

According to UNESCO, teacher readiness ESD and GCED combine teachers' motivation, skills, and opportunities to engage in impactful teaching. This readiness lies in the intersection of these three factors, including the possibilities available to them in their school and broader community. UNESCO emphasizes the importance of providing meaningful and impactful ESD and GCED teaching to ensure that teachers are well-prepared to teach these subjects effectively. (UNESCOc, 2021, pp. 54-56). Climate change and ESD are multifaceted and interconnected challenges that require collective action and engagement from all members of society. Both citizens and teachers have important roles to play in addressing these issues. As citizens, we have a responsibility to make sustainable choices and advocate for policy changes that support environmental protection. As teachers, we have the opportunity to educate and

inspire the next generation of environmental caretakers, equipping them with the knowledge and skills necessary to address climate change and promote sustainable development.

In the report *Teacher have their say,* UNESCO calls for action from an "education community of – lawmakers, policy-makers, educational planners, curriculum developers, teacher trainers, teachers, school leadership and staff and communities and other concerned actors […], to include GCED and ESD as core components of quality education. As UNESCO write "as interdisciplinary topics, they should be included across the curricula of multiple subject areas at all levels, and whole-school approaches as well as approaches engaging with the wider community should be encouraged and facilitated" (UNESCOc, 2021, p. 55).

While respect for nature and environmental awareness is emphasized in education and training as a core value, the interdisciplinary subject sustainable development is not currently included in the English curriculum. The term *sustainable development* in the interdisciplinary topics refers to "protecting life on earth and providing for the needs of people who live here now without destroying the possibilities for future generations to fill their needs" (Norwegian Directorate for Education and Training, 2017, p. 17). Moreover, sustainable development recognizes that social, economic, and environmental conditions are interrelated. Our daily habits and resource use have impacts at the local, regional, and global levels. According to the Norwegian Directorate for Education and training (2017), by working on this topic, pupils should develop the ability to make responsible choices and act ethically with environmental awareness. They will also understand that every individual activity and choice is important (p 9).

According to UNESCOc (2021), sustainable development should be taught as an interdisciplinary subject across multiple subjects and at all levels of education (p.55). Excluding English from this approach denies students the opportunity to learn from the valuable insights and perspectives that the subject has to offer. English language and literature can provide valuable insights, perspectives, and critical thinking skills that are crucial in understanding and addressing issues related to sustainable development. Therefore, it would be beneficial for English language education to be integrated into the curriculum alongside other subjects to ensure that students receive a well-rounded education.

Regardless of interdisciplinary topics, all activities at school should be based on core values, including respect for nature and environmental awareness. The core value respect *for nature*

and environmental awareness notes that the school should aim to nurture its pupils' love and respect for nature, as well as a heightened awareness of climate and environmental issues. Moreover, as human beings, we are part of nature and have a responsibility to care for it. During their education, pupils should learn about and respect nature, experiencing it as a valuable resource for joy, health, and education. It is important for pupils to understand how our lifestyles affect nature and the climate, and ultimately, our societies. Schools should encourage pupils to develop a willingness to protect the environment (p.9).

Furthermore, the Ministry of Education and Research (2017) writes that challenges of today and tomorrow must be faced by children and young people, as our common future relies on their willingness and ability to protect our world. Environmental threats such as global climate changes, pollution, and loss of biological diversity pose significant challenges that require collective effort to solve. Finding solutions and making the necessary changes to our lifestyle to protect life on earth requires knowledge, ethical awareness, and technological innovation (p. 9). The interdisciplinary subject is excluded from the English curriculum, which means pupils could miss out on opportunities to learn from the English perspective. Therefore, it is essential to include it in the subject regardless, based on the core value of education. By doing so, we can instill a sense of responsibility among students towards the environment and equip them with the necessary knowledge and skills to contribute to a sustainable future.

The report from UNESCOa (2021) concludes with a list of recommendations for improving climate change education. The recommendations provided are based on research and analysis from the research conducted in the report and aim at facilitating a more effective and inclusive approach to climate change education. Some of the recommendations are:

1. Climate change education should be a core curriculum component in every country: Only 53 per cent of the national curriculum frameworks of 100 countries reviewed included any mention of climate change content. A further 40 per cent included only a very minimal level of content [...]

In Norway, this particular topic is an essential part of the core curriculum. However, it is not covered in the English subject.

2. Greater focus on climate change content is needed in the curricula of countries most responsible for climate change: Currently, the country's most likely to include climate change content are those in regions most vulnerable to the impacts of climate change [...].

Despite Norway being located in a region that is not highly susceptible to the adverse impacts of climate change, it is crucial for us to acknowledge our responsibility in educating our students about the real consequences of the climate crisis. This includes the fact that the effects of climate change are not limited to our region alone but are felt globally, particularly in other regions of the world.

3. Teachers and school leaders need to be prepared to teach climate change: The results of the teachers' survey show that fewer than 40 per cent were confident in teaching about the severity of climate change but only about one-third of the teachers felt able to explain well the effects of climate change in their local context [...].

The results of the survey highlight the importance of providing teachers with comprehensive preparation and training programs to enhance their ability to effectively teach their pupils about climate change and sustainability.

4. Climate change education must equally focus on 'head', 'heart' and 'hands' – and teachers need to be ready: Many teachers and experts interviewed emphasized the crucial importance of action-focused learning. However, while about 40 per cent of teachers are confident in teaching the cognitive dimensions of climate change only about one-fifth can explain well how to take action. Teachers need to be ready to engage 'head', 'heart' and 'hands' through holistic curricula and pedagogies to ensure learners are knowledgeable, competent, hopeful and engaged.

To ensure that the pupils receive a well-rounded education, teachers must adopt an approach that goes beyond imparting knowledge. They must aim to engage their students on a deeper level, appealing to their emotions, creativity, and practical skills. By incorporating pedagogies that stimulate their heads, hearts, and hands, teachers can work towards creating a learning environment that fosters competency, hopefulness, and engagement among students.

5. Ministries of Education and Environment can and should work together to boost climate change education: Many good practice examples from across the world that are shown in this document indicate that bigger impact is created when Ministries responsible for education, environment and sustainable development collaborate to promote climate change education [...]. (UNESCO, 2021, p. 12).

The recommendations highlight the importance of climate change education in every country and call for greater focus on climate change content in the curricula of countries most responsible for climate change. It stresses the need to integrate climate change education related topics across all levels and disciplines of learning including 21st century skills (see, Chapter 2, section 2.2) and interdisciplinary approaches. It also emphasizes the importance of the preparedness of teachers and school leaders to teach climate change. Moreover, the recommendations emphasize action-focused learning and the importance of holistic curricula and pedagogies to ensure learners are knowledgeable, competent, hopeful, and engaged. Lastly, it suggests positive changes are taking place in countries in terms of climate change communication and education. It suggests that the Ministries of Education and Environment should work together to enhance climate change education.

The Sustainable development goals provide additional reasons for working with sustainable development and climate change in the English primary classrooms. The seventeen goals are meant to encourage action in areas crucial for the well-being of humanity and the planet for the next fifteen years (United Nations, 2015). One of the critical areas is *Planet*, which concerns the ultimate goal of ensuring that our planet can continue supporting the needs of current and future generations. In particular, I would like to emphasize the importance of goal thirteen, which calls for immediate action to tackle climate change and its effects (United Nations, 2023). This aligns with my research thesis, which focuses on assessing the readiness of teachers to teach climate change. The statement by UNESCO emphasizes the indispensable role of teachers in tackling the climate crisis and securing a sustainable future for the planet. The organization recognizes that teachers are at the forefront of equipping learners of all ages with the essential knowledge, skills, values, and initiative necessary to take decisive action against climate change. By empowering learners, teachers can inspire individuals to adopt sustainable behaviors and make informed decisions to impact the environment positively.

UNESCO acknowledges that teachers are key players in creating a sustainable future for the planet and future generations (UNESCOa, 2021, p.6). The critical area *Planet* includes the statement:

> We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations. (United Nations, 2015).

Moreover, goal number thirteen of the global sustainable development agenda is dedicated to addressing the issue of climate change.

> Goal 13. Take urgent action to combat climate change and its impacts.
> 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
> 13.2 Integrate climate change measures into national policies, strategies and planning
> 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
> (United Nations, 2015).

The objective is to combat the adverse impacts that climate change poses to our planet and to foster a more sustainable and resilient future for all. Goal 13.1 is a general goal emphasizing the overall need to create resilient citizens in all countries. This also applies to Norway, where we must begin working towards achieving this goal as early as possible. Goal 13.2 stresses integrating climate change measures into policies, strategies, and planning. Goal 13.3 directly addresses the need to enhance Education for Sustainable Development (ESD).
Lazarus (2009) writes that climate change is a complex and multifaceted issue (see Chapter 2.2) that poses a significant challenge to humanity, as Sustainable Development Goal thirteen displays. It is a wicked problem that demands attention and concerted action. Climate change has far-reaching impacts on ecosystem health and human livelihoods across the world, and its effects are felt predominantly by the most vulnerable communities. Despite the overwhelming scientific evidence, there is still some doubt as to whether humans cause climate change and whether it is, in fact, a problem. However, the majority of the global community recognizes it as a critical threat that requires immediate action. Climate change is a product of historical

actions and diffuse responsibilities, and addressing it requires a collective effort from all stakeholders (pp. 1159-1160).

In the ongoing efforts to combat the effects of climate change, education has emerged as a crucial player that can make a significant impact on a global scale. Goal 13.3 of the global sustainable development goals highlights the urgent need to enhance education, raise awareness, and build human and institutional capacity on various aspects of climate change, including mitigation, adaptation, impact reduction, and early warning. This goal recognizes the critical role that education can play in empowering individuals and communities to take effective action against climate change, and in fostering a more sustainable and resilient future for all (United Nations, 2015). UNESCOc (2021) write that educating individuals and communities about the impact of human activities on the environment, as well as the actions and policies that can mitigate it, can pave the way for a more sustainable and resilient future for our planet. By fostering environmental awareness, knowledge, and skills, education empowers people to take informed decisions and actions that can contribute to reducing carbon footprints, protecting ecosystems, and preserving natural resources (pp.12-13). The effective establishment of climate-ready classrooms relies significantly on the attitudes of teachers towards this task. Their positive outlook and proactive approach can help achieve Goal 13.3, which focuses on enhancing education and awareness on climate change mitigation, adaptation, impact reduction, and early warning within the school community. By creating an environment that promotes sustainability and environmental stewardship, teachers can help pupils become responsible global citizens who are equipped to tackle the challenges posed by climate change.

Ultimately, education can help to foster a culture of sustainability that values the health and well-being of both people and the planet. In order to effectively address the challenges at hand, it is crucial that our educators possess the necessary knowledge and expertise. Therefore, it is important to ensure that our teachers not only feel confident but also adequately prepared to teach about these challenges. This will enable them to equip their pupils with the skills and understanding required to tackle these issues and create a better future. Each teacher has a unique opportunity to impart knowledge and skills to their pupils, which will enable them to become active participants in the fight for a more sustainable world. As UNESCOc (2021) write, by teaching the principles of sustainability and the

importance of preserving our environment, these teachers are helping to create a generation that is conscious of their impact on the planet and is committed to making positive changes for the benefit of all (pp.54-56).

The United Nation have provided an overview of progress and info where they write that:

> An analysis of 100 national curriculum frameworks reveals that nearly half (47%) do not mention climate change. In 2021, despite 95% of teachers recognizing the importance of teaching about climate change severity, only one-third are capable of effectively explaining its effects in their region. Additionally, 70% of young people can only describe the broad principles of climate change in 2022 (United Nations, 2023).

The United Nations also presents an indicator for the different targets. The indicator for target 13.3 concerns the "Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment" (United Nations, 2023). After comparing the progress reported to the indicator required to complete the goal, it is evident that UNESCO's call to action in their report *Teachers Have Their Say* is justified (UNESCOc, 2021, p. 55). In the report UNESCOc (2021) lastly presents a list of action for the education community Including, lawmakers, policymakers, educational planners, curriculum developers, teacher trainers, teachers, school leadership and staff and communities and other concerned actors to follow:

1. Consider GCED and ESD as core components of quality education.
2. Integrate GCED and ESD as core curricular components in primary and secondary education.
3. Provide high-quality and relevant teaching and learning materials on global citizenship and education for sustainable development.
4. Provide high-quality professional development and teacher training to teach ESD and GCED.
5. Provide training and tools to support teachers in assessing students on ESD and GCED.

6. Involve teachers – especially through their elected representatives – in determining policies, curricula and assessment methods on GCED and ESD.
7. Support teacher leadership and professional autonomy.
8. Create a conducive school environment for teaching ESD and GCED.
9. Foster broader collaborations with academic institutions for ESD and GCED.
10. Ensure the active participation of students in determining ESD and GCED policies and practices.
11. Finally, prioritize GCED and ESD to ensure adequate investments are made to support teachers to teach ESD and GCED (p. 55-56).

The list of actions presented in the UNESCOc (2021) report corelate with the indicator for target 13.3 which concerns the "Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment" (United Nations, 2023). The urgent call for more focus on sustainability and the climate crisis are also highlighted by the recent event where the Grand Chamber of the European Court of Human Rights (EMD) recently announced its verdicts in three climate change-related lawsuits. This marks the first time that the EMD has concluded that a state can be held accountable for violating the right to privacy under the European Convention on Human Rights (EMK) if it fails to take adequate measures to mitigate climate change. Switzerland was found guilty of human rights violations in the *Klima Seniorinnen* case against Switzerland. The court ruled that climate change poses a real and immediate threat to the right to privacy. Therefore, authorities must take action to safeguard their citizens against climate change. The EMD concluded that authorities must establish a robust framework to combat climate change, including a carbon budget. Switzerland failed to meet its climate targets and did not take adequate measures to address the issue. As a result, they violated Article 8 of the EMK, which guarantees the right to life (Norges Insitusjon for menneskerettigheter, 2024). It is becoming increasingly evident that society is recognizing the importance of taking action to protect our planet. This realization is gradually leading to a growing sense of responsibility and a commitment to act in ways that can help protect the environment and preserve natural resources.

Moreover, Berkes (2004) defines a wicked problem (see Chapter 2.2) as one with no definitive formulation, no stopping rule, and no test for a solution, one that cannot be separated from issues of values, equity and social justice (p. 759). Barnett (2012), as cited in

Dillon et al. (2016), elaborates on the increasing prevalence of wicked problems we are facing today. Wicked problems are identified as complex social problems that are difficult to solve, mainly due to their interdependent nature, which makes them resistant to traditional problem-solving methods. These problems include poverty, equality, well-being, and sustainability challenges, which require a holistic approach to address. One of the main characteristics of wicked problems is that they lack clear-cut solutions because of incomplete or contradictory knowledge (pp. 450-454).

In the context of climate change and sustainability, we can see how Climate change impacts not only the material dimension but also the relational and subjective dimensions. For instance, UN Environment (2017), writes that some Indigenous cultural practices are becoming increasingly challenging to carry out due to the unpredictability of environmental conditions (Module 10: Climate Change). Furthermore, this is also true for non-Indigenous cultural practices, where warmer winters make outdoor activities like ice skating and hockey less possible in Canada (UN Environment, 2017, Module 10: Climate Change). This highlights how climate change impacts the everyday lives of children worldwide. Although sustainable development and climate change are often considered complex and wicked problems (see Chapter 2.2), specific examples and situations can be discussed with primary school students to address these issues. Additionally, climate change is a complex issue that poses a serious threat to our planet's ecological balance. In addition to its potentially catastrophic environmental consequences, climate change can have a profound impact on our emotional well-being. The feelings of shame, guilt, hopelessness, misery, and stress that often accompany the realization of the magnitude of this problem can make it difficult for us to pass on positive messages to future generations (UN Environment, 2017, Module 10: Climate Change). It is particularly important to consider the impact of climate change on our children growing up today, who will inherit this planet and be responsible for its future. Therefore, it is vital to ensure that today's children receive an adequate education in sustainability and climate change so that they can be well-prepared to cope with these challenges when they grow up.

2.2 Towards a solution

In this chapter, I will address what previous literature and theory suggest as solutions for making classrooms climate ready.

In her article, Chawla (2007) discusses the increasing number of studies showing a correlation between individuals who actively care for the environment in adulthood and positive experiences with nature during childhood. Chawla (20017) further explains that having childhood role models who showed appreciation for the natural world often influenced the children to have the same care for the environment in adulthood. The article examines remembered childhood interactions with influential role models based on a re-analysis of interviews with environmentalists in Norway and the United States. According to Chawla (2007), those who advocate for or spread awareness about the environment are most inspired by unique childhood places and people. Education was also mentioned as an experience that led to commitment; however, it was not one of the most frequent answers. Many people reported that their family members were their role models in appreciating the natural world. They were inspired by their family's love for nature and the unique places in nature where they spent time as a child, such as hiking, camping, or fishing (p.145). Understanding the reasons behind the answers is crucial for applying knowledge to enhance our environmental education in primary schools. It is also essential to take into consideration the differences among children, as individual differences can lead some children to develop a greater interest in nature (Chawla, 2007, p.148). Chawla's research indicates that the earlier children begin having positive experiences with nature, the more likely they are to develop an interest in caring for the environment themselves. This highlights the importance of introducing sustainability and climate change education from the earliest stages of primary school.

To help understand the reasons behind the frequently answered commitment factors, Chawla turns to ecological psychology as it gives insight into the importance of free play in nature. Ecological psychology by James Gibson (1979), Eleanor Gibson (1969) and Edward Reed (1996a; 1996b) also emphasizes the significance of adults when it comes to sharing their love for nature with children (Chawla, 2007, p. 148-149).

Chawla argues that ecological psychology is particularly fitting as a framework to help understand childhood experiences connected to adult actions for the environment. Ecological psychology is based on the principles of evolutionary theory and realist philosophy (Heft, 2001). According to the theory of evolution, humans are seen as similar to other living beings. This theory asserts that humans, like other organisms, interact with the physical world directly and have the ability to perceive the actual qualities of the world. These perceptions are not just mental constructions about the world. The idea behind this is similar to the environmental

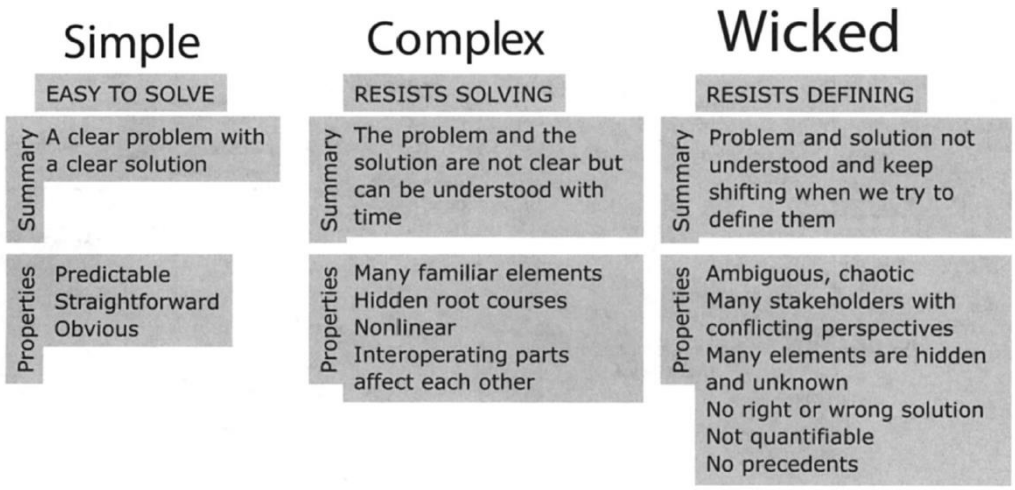
movement. It assumes that humans rely on the natural world and its resources and can learn about its limits through direct observation. This knowledge can then be used to adjust behavior in a more adaptable manner (Chawla, 2007, p. 149-151). This suggests that we should take our pupils outside the classroom and encourage them to explore nature through direct observation. Rather than just studying about climate change and sustainable development from textbooks, we should provide them with an opportunity to experience nature firsthand and provide necessary support.

Ecological psychology is also addressed by the realistic philosopher William James (1912/1976). According to James, we experience the world through a continuous stream of pure experiences that offer many possibilities for knowing. Moreover, he notes that we choose what we focus on based on our interests, culture, and society, but the information we notice reflects the true qualities of the world. Ecological psychology emphasizes agency by addressing people`s developing relations with the world. It is interesting to note that ecological psychology takes an interest in environmental learning and action across all settings, be it informal community settings or classrooms. Specifically, ecological psychology addresses the behavior of individuals in diverse situations, particularly when they learn through self-directed movement and exploration, as exemplified by children playing outdoors. Ecological psychology views people as part of a relational system by recognizing them primarily as moving organisms within their environment (Chawla, 2007, p. 149-151). Ecological psychology is concerned with environmental learning and action in all settings, such as the classroom. It highlights when children learn through self-directed movement and exploration, as exemplified by children playing outdoors. This demonstrates how we should work in-depth and cross-curricularly with climate issues and sustainable development. We can have a holistic approach by involving all subjects and thinking of it as something we can teach throughout the whole school day. Even the pupils' recess out in nature can provide opportunities for developing their willingness to protect nature.

As teachers, we can ensure that the pupils have positive experiences with nature early on. This will help them develop an interest in caring for the environment themselves. Therefore, sustainability and climate change education should be introduced from the earliest stages of primary school, and pupils should be encouraged to explore nature through direct observation. By teaching it holistically and involving all subjects cross-curricularly, we can aim to ensure in-depth learning and develop climate-ready classrooms.

Dillon et al. (2016) writes that problems related to climate issues are characterized by conflicting perspectives or values positions, making it difficult to reach an agreement on the best way forward. Therefore, addressing wicked problems requires a collaborative effort from various stakeholders who bring diverse perspectives and expertise to the table (p. 450-454, see figure 2). In order to effectively address these issues in an educational setting, we can expand our approach to encompass a cross-curricular perspective. By doing so, we can utilize a range of subject areas and teaching methods to create a more comprehensive and engaging learning experience for our students, fostering their critical thinking skills and making them climate ready.

Figure 2 A typology of problems based on Gibson and Fox (2013) as cited in Dillon et al. (2016).



Dillon et al. (2016) have highlighted the significant role of civic science in recent times and the possibility to use it to address wicked problems. Modern technologies have provided citizens with unprecedented opportunities for data collection, crowdsourcing, sharing, and interaction. Civic science allows for the active participation of individuals in scientific research, which has proven to be an effective means of generating new knowledge and advancing scientific understanding (p. 450). There are different types of civic science, which Dillon et al. (2016) classify based on the level of involvement from experts and scientists or more emancipatory forms driven by public concern. Transition-Driven Civic Science is relevant for this master's because, as Dillon et al. (2016) writes, it acknowledges that issues such as climate change or biodiversity loss are ill-defined, greatly contextually dependent, and

unclear (pp. 450-454). To address these wicked issues, it is essential to recognize citizens' agency, the value of different types of knowledge (including indigenous and local knowledge), and the importance of social learning in taking action to improve the situation (Dillon et al. 2016, pp. 450- 454). In the classroom, teachers are responsible for teaching students how to tackle difficult issues like climate change. To fulfill this responsibility, teachers must have sound knowledge and confidence in teaching about these complex problems. As role models, teachers can set an example by taking action and guiding students toward finding solutions to these challenges. Teachers' taking agency combined with in-depth knowledge creates a learning space where the pupils, through social learning, can observe and imitate the teacher.

Civic science is an approach to problem-solving that involves a diverse group of stakeholders, including scientists, in a joint learning process. This collaborative effort is aimed at addressing wicked problems, which are complex and multifaceted issues that have no clear solutions. Incorporating this working approach can be highly beneficial in educational environments as well. It promotes interdisciplinary learning by encouraging students to work together collaboratively. This not only fosters a sense of teamwork and cooperation but also allows students to develop a broader range of skills as they explore different subjects in a more integrated manner. Scientists, as one of the stakeholders in civic science, provide their expertise and knowledge to help inform the decision-making process. However, they are not the only group involved in the process, as the approach recognizes the importance of including a diverse range of perspectives and experiences from all stakeholders. The goal is to work together to find innovative and effective solutions that benefit everyone involved. This highlights the importance of teachers collaborating in interprofessional communities. Utilizing each other's strengths can create an optimal learning environment for the pupils. When dealing with complex issues such as sustainability and climate change, examining diverse viewpoints and experiences becomes crucial.

To solve wicked problems, we must question the values that drive fundamental inquiries, like what is important, what matters to different individuals, and what encompasses knowledge, power, and fairness. The focus is not on doing things better but on doing better things altogether by transitioning to new forms of science and civic engagement that can deal with emerging, wicked sustainability challenges. This perspective emphasizes multi-stakeholder dialogue, capacity building, agency, co-creation, and reflexivity and can be found on the

emancipatory side of the continuum (Bunders et al., 2010, as cited in Dillon et al., 2016, p. 451). Dillon et al. (2016) writes that resolving complex and intricate problems, also known as wicked problems, requires thoroughly examining the values that underlie fundamental questions, such as what is essential, what matters to whom, and what constitutes knowledge, power, and fairness. These values must be challenged to make it possible to find solutions to wicked problems (pp. 450-454). This process can be challenging, as it may involve questioning long-held assumptions and beliefs, but it is a crucial step in addressing the root causes of the problem rather than just treating the symptoms. By challenging these values, we can open up new perspectives and possibilities for addressing wicked problems.

Environmental ethics is a branch of philosophy that explores the complex moral and ethical relationships between human beings and the natural environment. This field of study evaluates the value and ethical status of the environment and all its non-human constituents, including animals, plants, and ecosystems. The discipline aims to investigate how our actions as humans impact the environment and its inhabitants and how we can balance our needs and aspirations with living in harmony with nature (Brennan & Lo, 2021). The "deep ecology" movement originated in Scandinavia due to discussions between Arne Næss and his colleagues, who shared a passion for mountains. While visiting the Himalayas, the visitors were struck by the Sherpa culture and their practice of considering certain mountains sacred and avoiding hiking them. Næss formulated a position that extended this reverence to other aspects of nature beyond just the mountains. (Brennan & Lo, 2021). Environmental ethics and deep ecology suggest a change in how we think about humans` relation to animals and nature. These approaches encourage us to reconsider our traditional anthropocentric views and recognize the intrinsic value of non-human life forms, as well as the interdependence of all living beings within ecosystems. By adopting a more holistic and respectful attitude toward nature, we can strive towards a more sustainable and harmonious coexistence with our environment, according to environmental ethics and a deep ecology approach (Brennan & Lo, 2021). By incorporating this method into the teaching of literature, students can develop a deeper understanding and appreciation for the natural world, empathy towards animals, and a willingness to protect nature. However, this needs to be combined with developing agency and 21st-century skills, as well as knowledge of how to help and what the pupils can do. This is partly why the problem needs to be approached in a cross-curricular manner. The opportunities of the English subject could beneficially contribute to the development of establishing climate-ready classrooms. The English subject could, together with the other

subjects, offer opportunities to work with the issues of climate change and sustainability in a cross-curricular manner, working towards developing climate-ready classrooms.

There is a growing emphasis on 21st-century skills in the global education conversation. Many countries are now working to ensure that their education systems provide children with more than just cognitive abilities like reading and math, but also equip them with 21st century skills. 21st century skills are defined by Global Partnership for Education (2020): “Twenty-first-century skills are abilities and attributes that can be taught or learned in order to enhance ways of thinking, learning, working and living in the world.” (Global Partnership for Education, 2020, p.v). These skills can help students tackle the complex and challenging problems posed by climate change, which will be particularly important as they grow up and take on responsibility as adults. “The skills include creativity and innovation, critical thinking/problem solving/decision making, learning to learn/metacognition, communication, collaboration (teamwork), information literacy, ICT literacy, citizenship (local and global), life and career skills, and personal and social responsibility (including cultural awareness and competence)” (Global Partnership for Education, 2020, p.v). Teachers can encourage climate consciousness in students by developing 21st century skills in the classroom to promote responsible environmental practices among their pupils. Incorporating 21st century skills into the classroom can also be an effective way for teachers to inspire climate consciousness. By utilizing innovative teaching methods, such as project-based learning and technology integration, educators can encourage responsible environmental practices and help students develop a deep understanding of the impact of human activity on the planet. As well as engaging students in hands-on activities and empowering them to take action, teachers can help develop citizens who are equipped to tackle the pressing challenges of the future. According to the Ministry of Education and Research's Core values for education and training, respect for nature and environmental awareness emphasizes the importance of acknowledging and appreciating the environment around us.

> Children and young people will need to deal with the today's and tomorrow's challenges, and our common future depends on the coming generations and their willingness and ability to protect our world. Global climate changes, pollution and loss of biological diversity are some of the greatest environmental threats in the world. These challenges must be solved together. We need knowledge, ethical awareness and

> technological innovation to find solutions and make the necessary changes to our lifestyle to protect life on earth. (Ministry of Education and Research, 2017, p. 9).

The Ministry of Education and Research stresses the significance of valuing the environment around us (p.9). By incorporating environmental ethics, particularly deep ecology, we can encourage students to adopt a holistic and respectful approach toward nature. This, in turn, can lead to a more sustainable and peaceful coexistence with our environment. In other words, the students will learn to take better care of our planet.

The Ministry of Education and Research (2017) also emphasized the importance of collaborative problem-solving (p.9). This emphasizes the importance of interdisciplinary approaches that incorporate 21st-century skills to tackle complex issues effectively. Combining diverse perspectives and skills among our students can help them find innovative solutions for the future. The 21st century skill of collaborative learning is further on described to be tasks were […], students can practice understanding what others think, feel, and experience. This forms the basis for promoting empathy and friendship among students. […] (p. 10). It is crucial to provide pupils with opportunities to learn collaboratively and offer them the necessary support during their school years. Integrating all subjects in the learning process is an effective approach to this goal, as it offers a holistic perspective and a comprehensive approach to tackling the complex issues related to environmental sustainability and climate change. Additionally, the Ministry write that collaboration in subjects fosters social, emotional, and cognitive development and learning among students. Dialogue is central to social learning, and schools should convey the value and significance of a listening dialogue to deal with resistance (Ministry of Education and Research, 2021, p. 11). Developing well-designed collaborative tasks is essential for fostering effective learning outcomes among the pupils. By encouraging pupils to engage in dialogue and work together to find solutions, they can develop valuable interpersonal skills, critical thinking abilities, and gain a deeper understanding of the subject matter. Effective collaborative tasks require careful planning and consideration to ensure that all students are engaged, and learning takes place in a safe and supportive environment (Ministry of Education and Research, 2017, p. 9). This highlights the significant responsibility of teachers in planning and executing effective collaborative tasks. It also emphasizes the need for teachers to possess the necessary knowledge and skills to ensure successful outcomes when working with sustainable development and climate change.

Cini et al. (2023) conducted research in higher education, focusing on, among other areas, how teachers can make classrooms climate-ready. Although my research primarily focuses on primary school teachers, the findings in the report by Cini [et al.] (2023) are relevant to my thesis as the same teaching principles apply. One of the participants in the study emphasized that the focus when trying to teach sustainable development was "on how students could develop the critical thinking skills and democratic values that would equip them for a life reflecting carefully on how to have an impact on the world" (Cini et al., 2023, p.35). The participants in the study also mentioned [...] "a change in the relationships between teachers and students" (Cini et al., 2023, p.35). Moving from a more traditional way of teaching where the teachers speak, and the learners passively receive, "Instead, there was a more mutual construction of knowledge, which means a different dynamic between teachers and students" (Cini et al., 2023, p.35). One of the participants in the study explained that when he designed cases to address environmental, social, and economic challenges, he involved the students as partners. Since the next generation will tackle the challenges, students must play a crucial role in defining them. It is worth noting that he emphasized that students were not just involved but were considered partners (Cini et al., 2023, p.35). Also addressed in the report was a common feature in the academic's description of their educational practices that:

> [...] a relation of co-creation between academics and students lead to a different style of teaching, based on a mentor relationship. Instead of the teacher explaining in a monologue, students are invited to participate in a dialogue, for example using the Socratic method.

The method was explained by one of the interviewees "The mentor and the Socratic method are inviting questions and the development of the learner, as an independent learner" (Cini et al., 2023, p.36). One of the other interviewees also addressed this and explained his teaching style. He explained how he believes his teaching style revolves around asking questions. He explained how he tends to pose questions that encourage his students to think deeply about a subject and explore various perspectives. He aims to create an atmosphere of reflection where everyone can share their thoughts and ideas. However, he does not aim to influence the reflections that people make. Instead, he tries to foster a community that encourages multiple forms of analysis and thinking. Ultimately, he believes that a good class should challenge the students and himself, leading him to think more deeply about the issues at hand (Cini et al., 2023, p.36). This way of teaching as presented by the interviews in the report corelates to our

21st century skill critical thinking. This way of teaching, as presented by the interviews in the report, correlates with the 21st-century skills of critical thinking highlighted in LK20, "School shall help pupils to be inquisitive and ask questions, develop scientific and critical thinking and act with ethical awareness"(Ministry of Education and Research, 2017). The core value emphasizes the essence of critical thinking, which involves scrutinizing and criticizing established ideas, assessing different sources of knowledge, and thinking reflectively and responsibly. It highlights how teaching and training must aim to develop students' ability to make ethical assessments and understand ethical issues (Ministry of Education and Research, 2017). Further on, "Critical reflection requires knowledge, but there is also room for uncertainty and unpredictability. Therefore, the teaching and training must seek a balance between respect for established knowledge and the explorative and creative thinking required to develop new knowledge" (Ministry of Education and Research, 2017). Additionally, practical work in various fields requires reflecting, judging, and evaluating. Finally, the Ministry of Education and Research (2017) writes that learning in different contexts requires critical thinking and ethical awareness, essential for developing good judgment among pupils.

Communication is also a central part of the 21st century skills that teachers can use to promote environmental practices among their students. Communication is explained in the core elements of the English subject curriculum:

> Communication refers to creating meaning through language and the ability to use the language in both formal and informal settings. The pupils shall employ suitable strategies to communicate, both orally and in writing, in different situations and by using different types of media and sources. The pupils shall experience, use and explore the language from the very start. The teaching shall give the pupils the opportunity to express themselves and interact in authentic and practical situations. (Ministry of Education and Research (2019, p. 2).

Fenner and Skulstad writes that "communicative competence is the single most important concept in English didactics (2020, p. 43). They continue to write that "A central idea of Communicative Language Teaching (CLT) is that real communication always has a purpose and a function" (Fenner & Skulstad. 2020, p. 50). This central idea within CLT aligns with teaching climate change and sustainability as it concerns real problems that the pupils, the next generation will have to deal with. Effective communication is a vital aspect of the 21st-century skills that teachers can utilize to encourage environmental practices among their

students. According to Fenner and Skulstad, communicative competence is the most crucial concept in English didactics (2020, p. 43). They further explain that the central idea of CLT is that genuine communication always serves a purpose and function (Fenner & Skulstad, 2020, p. 50). This principle is particularly relevant to teaching climate change and sustainability, as it deals with real-world issues that the next generation of pupils will face. The Ministry of Education and Research (2017) writes that the future of our planet relies on the ability of today's children to protect the environment. Some of the biggest environmental threats are climate change, pollution, and loss of biodiversity (p.9). Incorporating communicative competence into their pedagogical approach can prove helpful for educators, as it enables them to equip their students with the essential abilities to understand and tackle environmental issues. By prioritizing this aspect of education, teachers can foster a learning environment that nurtures critical thinking, effective communication, and problem-solving skills, all of which are critical to addressing the pressing environmental challenges of our time (Fenner & Skulstad, 2020, pp. 58-60).

The core value, the joy of creating, engagement, and the urge to explore, addresses the fact that providing children with rich opportunities to explore and create can develop their curiosity and urge to learn (Ministry of Education and Research 2017, p. 8). This aligns with the 21st century skill creativity and innovation where the Ministry continues to write that "Creative abilities contribute to enriching society. Collaboration inspires innovation and entrepreneurship so that new ideas can be transformed into action" (Ministry of Education and Research 2017, p. 8). Therefore, allowing the pupils to explore outside in nature can create excitement and curiosity where they want to learn more. This can, in turn, inspire them to take action to preserve our planet for generations to come. By engaging in creative activities as part of the learning process, pupils can develop problem-solving skills and the ability to express themselves in various ways (Ministry of Education and Research 2017, p. 8). This is especially true for pupils, as they get the opportunity to think outside the box and come up with innovative solutions while also enhancing their communication skills and exploring their creativity.

In the book *Teaching English in the 21st century* Sigrid Ørevik (Fenner & Skulstad, 2020, p. 50) explains that digital technology on the English classroom has "opened doors to innumerable categories of information, art and entertainment and, simultaneously, set up a variety of platform for computer-mediated communication. In the book Teaching English in

the 21st Century Sigrid Ørevik (Fenner & Skulstad, 2020) explains that digital technology on the English classroom has "opened doors to innumerable categories of information, art and entertainment and, simultaneously, set up a variety of platform for computer-mediated communication"(p. 166). Students can access an extensive amount of English language materials through the Internet, which can provide insights into curricular topics from various perspectives. In-class projects, as well as out-of-school contexts, involve online forums where English language discussions take place. Also, students produce collaborative text through wikis and blogs (Fenner & Skulstad, 2020, p. 166). The Ministry of Education and Research (2017) writes that "We need knowledge, ethical awareness and technological innovation to find solutions and make the necessary changes to our lifestyle to protect life on earth". Throughout the entire learning journey, the school should aid and encourage the pupils' development in the five fundamental skills. These skills include reading, writing, mathematics, oral communication, and digital proficiency, as the Ministry of Education and Research outlined in 2017. Digital skills are explained in the English subject curriculum as follows:

> […] being able to use digital media and resources to strengthen language learning, to encounter authentic language models and interlocutors in English, and to acquire relevant knowledge in English. This requires critical and reflected behavior using digital forms of expression in English and in communication with others. The development of digital skills in English progresses from exploring the language to interacting with others, creating texts and acquiring knowledge by obtaining, exploring and critically assessing information from different English-language sources. (Ministry of Education and Research, 2019, p. 4).

The Internet provides the pupils with an extensive collection of English language materials, enabling them to gain a comprehensive understanding of curricular subjects from a diverse range of perspectives. With the rise of the internet, the pupils now have access to a multitude of English language resources. The richness of digital materials available online provides students with a lot of information, allowing them to explore curricular topics in greater detail. By utilizing these resources, pupils can gain a comprehensive understanding of concepts and ideas and develop their critical thinking and analytical skills (Ministry of Education and Research, 2019, p. 4). Digital skills, along with collaborative skills, creativity, communication, critical thinking, and the development of knowledge and agency, can help

foster the pupil's empathy and a willingness to preserve the earth. Therefore, developing these 21st century skills are essential for the pupils to understand how they can contribute and make a difference towards a better future.

The curriculum includes three interdisciplinary topics: health and life skills, democracy and citizenship, and sustainable development, focusing on societal challenges that require individual and community effort, both locally and globally. Through working with issues from various subjects, pupils develop competence in connection with these topics and gain insight into the challenges and dilemmas they present. Pupils must understand how knowledge and collaboration can lead to solutions and learn about the relationship between actions and consequences. The knowledge base for finding solutions is present in many subjects, and the interdisciplinary topics help pupils understand and see connections across subjects. The goals for what pupils should learn in these topics are stated in the competence goals for the individual subjects where relevant (Ministry of Education and Research, 2017, p. 15).

To summarize this chapter, the core curriculum emphasizes the importance of developing climate and environmental awareness among pupils. However, many teachers lack confidence in teaching about climate change and sustainability. UNESCO reports show that only one-third of teachers feel confident in explaining the impact of climate change on their region. Adopting an interdisciplinary approach and collaborating with multiple teachers can help less experienced teachers gain confidence in teaching sustainability and climate change. The report highlights the need for increased efforts to provide teachers with adequate training and resources to help pupils understand the impacts of climate change and equip them with the skills to take action towards a sustainable future. UNESCO's online survey gathered insights from teachers and education leaders across a wide range of countries and territories, emphasizing the great need for more understanding of the extent to which countries address sustainability issues in education. It appears that there is time for a gradual shift in focus towards imparting knowledge about climate and sustainability-related topics in primary schools within Norway. The reason behind this shift is the increasing pressure from influential organizations such as UNESCO. These organizations are urging Norway to take responsibility and ensure that they do not fall behind in the area of ESD. It is crucial for Norwegian teachers to recognize these changing trends and address the pressing need for teaching climate and sustainability-related topics in schools. This will help Norway to stay up-to-date with the

evolving times and ensure that they are doing their part in building a sustainable future for the coming generations.

3 Method

3.1. Introduction

To conduct this research convenience sample of primary English teachers was selected from four different schools in Norway. The recruitment process was initiated by sending an invitation email to all the English teachers in these four schools. The email provided them with a detailed overview of the research project and encouraged them to participate in the study. The email also included a consent form that the teachers had to sign if they agreed to take part. The consent form outlined the purpose of the study, the methods that would be employed, the potential benefits and risks of participation, and the measures that would be taken to ensure the confidentiality and safety of the participants' data. It was emphasized that the teachers' participation was voluntary and that they could withdraw from the study at any time without any consequences. The recruitment process ensured that the participants were fully informed and comfortable with their involvement in the study. The participants were given ample time to review the information and ask questions before deciding whether to take part in the study. Overall, the recruitment process was designed to prioritize the safety and well-being of the participants while also ensuring the accuracy and reliability of the study's results.

The purpose of the four interviews was to gather data on their attitudes and beliefs about creating climate-ready classrooms. Researching teacher cognition is important because the findings in the UNESCO report *Getting Every School Climate-ready* highlight that a low percentage of teachers across the world felt ready to teach about climate change and sustainability. To establish climate-ready classrooms, it is essential to map out the reasons for this trend among teachers.

My research sample consists of four English teachers who have completed at least 30 credits in English. Three of these four teachers teach English to pupils in grades 1-7 in Norwegian primary schools, and the remaining teacher is an English teacher at an International School.

Table 1: Overview of participants

Informant:	**English Education:**	**Experience:**	**Year:**	**Interview**
T1	30 credits	2 years	2	8 minutes
T2	60 credits	10 years	5	10 minutes
T3	60 credits	2 years	2	10 minutes
IT1	60 credits	15+ years	6	23 minutes

3.1.2 Interview as method and qualitative research

For this thesis, I decided to conduct qualitative research through interviews to study English teachers' mindsets and views on establishing climate-ready classrooms. The purpose of qualitative research is to provide a detailed understanding of observable and non-observable phenomena, attitudes, intentions, and behaviors through naturalistic inquiry (Gonzales et al., 2008, p. 3). The study was designed to research English teachers' mindsets and views on establishing climate-ready classrooms through interviews, defined by Brinkmann and Kvale as: "A constructed conversation that requires careful questioning and listening" (Brinkmann & Kvale, 2015, p.31). The interview followed a semi-structured format and consisted of the topics: definition of sustainable development, experience, interdisciplinary, connection to the English subject, lessons and reported attitudes and beliefs. The interview questions can be found in Appendix 3. An interview is similar to an everyday conversation, but it has a specific purpose and requires a structured approach and technique. An interview is semi-structured when the researcher does not make use of a closed questionnaire but rather uses an interview guide that emphasizes certain themes. The interviewer uses an interview guide that emphasizes certain themes and may include suggested questions to conduct the interview (Brinkmann & Kvale, 2015, pp. 31-32). The questions were thoughtfully designed to be open-ended, which allowed the teachers to express their thoughts and opinions freely without any restrictions. Additionally, the teachers were given the freedom to discuss any relevant information that they felt was important and pertinent to the questions, allowing for a more comprehensive and detailed response. During my interviews with the teachers, I aimed to collect detailed information about their attitudes towards teaching sustainable development. I asked them questions to ascertain their level of preparedness to teach about sustainability. I also inquired whether their readiness to teach on the subject was influenced by their educational background or personal beliefs. These topics included sustainable development, personal experiences, interdisciplinary studies, connections to the English subject, lessons

learned, and reported attitudes and beliefs. The method allowed participants to speak freely on the topic while still maintaining a structured approach to ensure that each participant was asked the same set of questions. This approach offered a balance between open-ended and structured questioning techniques, allowing for an enriched and comprehensive data collection process.

According to Brinkmann and Kvale (2015) "generally, in qualitative inquiry, phenomenology is a term that points to an interest in understanding social phenomena from the actor's own perspectives and describing the world as experienced by the subjects, with the assumption that the important reality is what people perceive it to be (p. 30). This is beneficial in my research as I am studying teachers' reported thoughts, values and beliefs which can be linked to what Borg writes about teacher cognition.

This project aims to investigate teachers' attitudes towards establishing climate-ready classrooms. It has been essential to research their cognition and reported knowledge to understand the reported thoughts that lead to their answers. According to Borg, teacher cognition refers to the hidden cognitive aspect of teaching, which includes what teachers know, believe, and think. It influences their decision-making process when planning what to do, as well as what materials and activities to incorporate into their classroom (Borg, 2003, p. 81).

Teacher cognition is defined as "what teachers think, know and believe and the relationships of these mental constructs to what teachers do in the language teaching classroom" (Borg, 2003, p. 81). Teachers are highly involved and analytical individuals who use their various knowledge, beliefs, and thoughts to make informed decisions about teaching. Teacher cognition research explores important topics such as:

- "what do teachers have cognitions about?
- how do these cognitions develop?
- how do they interact with teacher learning?
- how do they interact with classroom practice?" (Borg, 2003, p. 81).

Furthermore, Borg (2003) notes that the classrooms of language teachers are formed by many interacting and often conflicting factors (p. 91). According to Borg's (2003) research, various

interacting and sometimes conflicting factors influence language teachers' classrooms. Further on, he notes that teachers' cognitions have a huge influence on their practices, however, these do not at all times reflect teachers' expressed beliefs, personal theories, and pedagogical principles (p. 91). Moreover, Borg (2003) notes that "individual trainees make sense of and are affected by training programs in different and unique ways" (p. 91). Borg (2003) presents evidence in the direction which shows that programs which ignore trainee teachers' prior beliefs may be less effective at influencing them (p. 81). According to Borg's (2003) findings, it is essential to note that a change in an individual's behavior does not always indicate a change in their thought process, and the same is true in reverse. Thus, Borg's research implies that it is possible for a person to behave differently without necessarily changing their way of thinking and for their thought process to remain the same despite a change in their behavior (Borg, 2003, p. 91). As I intend to examine teachers' reported abilities and attitudes toward establishing climate-ready classrooms, I believe that the connection between behavioral and cognitive changes will play a crucial role in shaping my research results. The nature of this relationship can significantly impact the validity and reliability of my findings.

When interviewing teachers about their ability to create a climate-ready classroom, it is interesting to note that Borg (2003) writes that the language teacher's classroom is formed by multiple interacting and often conflicting factors. This implies that creating an optimal learning environment in such a classroom requires a deep understanding of these complex dynamics. As I analyze my findings, I must take into consideration the possibility that the teachers' perception of their own capabilities may not align with the practical realities of the classroom. It is crucial to acknowledge the possibility that their beliefs might be based on assumptions that are not achievable in a real-world educational setting. However, by using a qualitative research method, I can potentially address the considerations and assumptions related to the teacher cognition. The awareness of teacher cognition combined with the qualitative research method provides an optimal platform for exploring my interview questions leading towards my main research question.

3.2 Reliability and validity

According to Hammersley, reliability "refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions" (1992a, p. 67). Moreover, "Reliability usually refers to the degree to which the findings of a study are independent of accidental circumstances of their production (Kirk & Miller, 1986, p. 20). The concept of replicability in research refers to the extent to which a study or experiment can be accurately reproduced by future researchers, following the same procedures and methods. It is an essential aspect of research, as it ensures that the findings are reliable and valid. If a research project is replicable, other researchers can verify the results and build upon them, contributing to the advancement of knowledge in the field. On the other hand, if a study is not replicable, it raises questions about the reliability and validity of the findings and may even lead to the rejection of the research altogether. Therefore, researchers must carefully consider replicability when designing and conducting their studies (Silverman, 2014, p. 83).

Additionally, Moisander and Valtonen (2006) propose two ways to meet reliability criteria in non-quantitative research: Firstly, "by making the research process transparent through describing our research strategy and data analysis methods in a sufficiently detailed manner in the research report" (Moisander & Valtonen, 2006, pp. 83-84). Secondly, "paying attention to theoretical transparency by making explicit the theoretical stance from which the interpretation takes place and showing how the produces particular interpretations and excludes others" (Moisander & Valtonen, 2006, pp. 83-84). The trustworthiness of research is closely related to its reliability (Kvale & Brinkmann, 2015, p. 281).

For my research, I conducted interviews with four teachers and analyzed the data to address my research question. It is important to note that if the interviews were conducted again, the data collected would have been different. People's thoughts and opinions are subjective and influenced by personal and contextual factors. The strength of utilizing open-ended questions and semi-structured interviews lies in their ability to provide interviewees with a greater degree of freedom and flexibility in expressing their thoughts and ideas. Unlike closed-ended questions that limit responses to predetermined options, open-ended questions allow interviewees to discuss a topic in a more nuanced and detailed manner. Similarly, semi-structured interviews provide a framework for the discussion while still allowing the

interviewee to expand on certain areas of interest. This approach can give valuable insights and information that may not have been captured through more closed interview formats.

As an interviewer, I value responsibility and ethics and understand the significance of collecting reliable and trustworthy data during interviews. When handling data and presenting the results, I followed several measures that prioritized fairness, accuracy, and confidentiality. Firstly, I prepared an unbiased set of comprehensive questions that aimed to elicit informative and relevant responses from the interviewee. These questions were designed to be unbiased, ensuring that the interviewee was not being led towards a particular response (Appendix 3). Secondly, I engaged in active listening, which involved paying close attention to the interviewee's tone and body language to gain a deeper understanding of their perspective. This enabled me to interpret their responses more accurately, ensuring that relevant information was not missed. Furthermore, I maintained strict confidentiality and anonymity throughout the interview process, ensuring that the privacy rights of interviewees were protected. This was essential to build trust with the interviewees and ensure that their responses were not shared with unauthorized parties. By following these protocols, I aimed to provide accurate and dependable data to the best of my ability. I believe that conducting interviews in a fair, accurate, and confidential manner is essential to ensure that the resulting information is valid.

Validity refers to the extent to which a research method investigates exactly what it intends to investigate (Kvale & Brinkmann, 2015, p. 28). It is the degree to which observations reflect the phenomena or variables of interest (Pervin, 1984, p.48). This means that qualitative research can potentially lead to valid scientific knowledge if it is conducted with this open conception of validity (Kvale & Brinkmann, 2015, p. 282). The research project aims to investigate how teachers perceive their ability to establish a climate-ready classroom and their attitudes toward this task. Cohen, et al (2018) write that in order for a study to be valid, the methods and instruments used to collect data should be appropriate for understanding the phenomenon being studied (p. 245). In an effort to ensure that my research questions were answered successfully, I tested the interview guide and requested feedback from my supervisor and fellow students. I was particularly interested in their thoughts on whether the questions were formulated in a clear and understandable way as well as whether the questions provided participants with enough freedom to express their thoughts and ideas without being restricted by the interview guide. The aim was to have questions that allowed participants the freedom to express their thoughts and ideas freely. After interviewing the first participant I

realized that the questions required a more focused approach. The scope of the questions was too broad, which made it difficult to get accurate and specific enough response from the participant. Therefore, I decided to narrow down the focus of the questions to get more precise and detailed answers from the rest of the interviews. For instance, I attempted to guide the teachers back to my initial question when they veered off-topic to a significant degree. This allowed me to gather more relevant data for my research questions. However, after reviewing the data gathered, I believe that the results would have been more accurate if the questions had been even more focused and narrow in scope.

Given the strict word count limit of 30,000 words for my master's thesis, I had to limit my sample size to only four teachers for the purpose of this study. While I would have liked to include a larger number of participants, I am confident that the information gathered from these interviews could provide some meaningful contributions. Teacher cognition is a complex and multifaceted phenomenon that consists of various cognitive processes and factors, such as beliefs, knowledge, attitudes, and experiences. These processes and factors are influenced by various contextual factors, such as the school environment, the student's characteristics, the curriculum, and the policies. Given this complexity and specificity, it is difficult to generalize teacher cognition to a broader population. Therefore, my research focuses on an in-depth analysis of the cognition of selected teachers. I will also explore how these processes and factors interact with the contextual factors to shape their cognition. By using an in-depth and detailed approach, I hope to gain a better understanding of the complexity and specificity of teacher cognition. This, in turn, could inform the development of effective teacher training programs and policies that can enhance the quality of education and improve student outcomes.

3.2.1 Interview procedure

During the interview process, each participant engaged in a one-on-one conversation. I utilized an interview guide as a reference point and to facilitate reflection on any observations made during the interview. This approach ensured that each interview was conducted in a consistent manner, allowing for a comprehensive understanding of the participants' reported perspectives and experiences. Prior to the interviews, I made sure to ask the participants what language they felt most comfortable using for the interview. As a result, T1, T2, and T3 spoke in Norwegian, while IT1 used English. This means that the data presented from T1, T2, and

T3 is translated by the researcher. The interviews took place at four locations, with three teachers being interviewed at their respective workplaces and one at a local cafe. It is noteworthy that the location of the interview can have an impact on the responses given, as the environment and setting can influence the participant's comfort level. Therefore, providing a comfortable and safe space for the interviewees to share their experiences and thoughts was a crucial aspect i this research. The location of the interview can have an impact on the responses given, as the environment and setting can influence the participant's comfort level. After conducting the interviews, I used the transcription function provided by the platform Nettskjema to convert the spoken words into a written format. Moreover, the transcriptions were then reviewed thoroughly to ensure that the accuracy of the data was maintained. Additionally, the recordings of the interviews were reviewed to ensure consistency between the transcription and the original spoken words. This process aimed to strengthen the accuracy and trustworthiness of the data presented here.

3.3 Ethical considerations

When conducting an interview, there are several ethical considerations to be aware of. Brinkmann and Kvale (2015) emphasize that a research interview is a unique type of professional discussion that usually involves a power asymmetry between the interviewer and the interviewee. This power asymmetry arises from the fact that the interviewer typically initiates the discussion, chooses the subject matter and the specific questions, determines which areas to explore in greater depth, and ultimately concludes the interview (p. 37). In other words, the interviewer holds more power and control over the conversation than the interviewee (Brinkmann & Kvale, 2015, p. 99). This power dynamic could potentially influence my interviewees' responses and lead to biased or inaccurate data. Therefore, I must be aware of this power imbalance and take steps to minimize its impact on the interviewees' responses. By doing so, I can ensure the integrity and validity of my research findings. Brinkmann and Kvale (2015) write that although there will always be a power asymmetry when conducting an interview (p.38). However, suppose power is inherent in human conversations and relationships Brinkmann and Kvale (2015) continues to write that, the point is not that power should necessarily be eliminated from research interviews but rather that interviewers should reflect on their role in the production of interview knowledge (p.38). By reflecting on my position of power, I can ensure that the information gathered is accurate and representative of all parties involved. This involves acknowledging the influence of my

questions, responses, and actions on the interviewee and being mindful of the impact of their position of power. Through such self-reflection, I can ensure my interview is fair, objective, and inclusive.

Brinkmann and Kvale (2015) present four ethical considerations to consider when conducting qualitative research that should guide researchers in their work. The first consideration is informed consent, which involves obtaining the participant's voluntary and informed agreement to participate in the study. The second consideration is confidentiality, which requires researchers to protect participants' privacy by keeping their identities and personal information confidential. The third consideration is consequences, which involves anticipating and mitigating potential risks or harm from the research. Finally, the role of the researcher is an ethical consideration that requires researchers to maintain objectivity and avoid any conflicts of interest. This MA project was conducted with careful consideration of the key ethical principles: informed consent, confidentiality, consequences, and the researcher's role. Each of these principles was approached with a high level of attention to ensure that the project was conducted in a fair manner. In the following section, I will provide a detailed outline of how each of these principles was handled throughout the course of the project. Confidentiality and informed consent are essential principles that safeguard the welfare of research participants. Confidentiality ensures that the information provided by the participants is kept private and not disclosed to any unauthorized individuals. On the other hand, informed consent ensures that the participants are fully aware of what they are consenting to. The notion of informed consent "is grounded primarily on the principle of individual autonomy and secondarily on that of beneficence" (Marzano, 2012, p.443). These ethical principles have been developed with the intention of upholding the autonomy and decision-making capabilities of individuals while also ensuring their safety and well-being during the research process. As part of these principles, the participants will have the option to access both the transcription and analysis of the qualitative data collected during the study.

Brinkmann and Kvale (2015) emphasize the importance of ethical considerations in preparing an ethical protocol or conducting a qualitative study. They suggest that these considerations can serve as a framework to guide interview research and provide ethical reminders of what to look for in practice (p. 99). To achieve this, I made sure to obtain informed consent from all participants involved. I clearly communicated the purpose of the interview, as well as the potential advantages and drawbacks of taking part in the research project. This step was

crucial in allowing me to accurately transcribe and code my findings, and to ensure that the data collected was both accurate and ethically obtained. By preparing myself and reflecting on the four fields of uncertainty before conducting my data, analyzing and coding I was able to gain a solid understanding of all aspects of the research I wanted to conduct. By exploring each field in detail, I gained a deep understanding of the complex and interconnected issues that arise in any research project. I identified potential roadblocks and challenges that could have derailed my research project and was well-equipped to manage them when they occurred. Overall, taking the time to reflect on the four fields of uncertainty provided me with a comprehensive understanding of the research project and helped me approach the work with a sense of purpose and confidence, knowing that I had done the necessary groundwork to ensure success.

While presenting my research findings, I made the decision to incorporate quotes from the interviews I conducted. This approach was chosen as it was suggested by Brinkmann and Kvale (2015) that quotes can significantly enhance the reader's understanding of the interview's content and the nature of the interaction between the interviewer and interviewee. Moreover, they write that quotes serve as a powerful tool to exemplify the material used for the researcher's analyses, providing a more detailed and vivid representation of the data analyzed (p. 313). In order to ensure accuracy and consistency in transcribing and organizing my findings, I have reviewed the guidelines for presenting interview results using quotes and examined how interview quotes should be written (Brinkmann & Kvale, 2015, pp. 313-315). While analyzing the presentation of interviewees, I realized that language errors, pauses, stammers, and repetitions can also hold significant meaning. However, it is crucial to consider the interviewee's perspective, as they might feel uneasy about seeing their speech traits in the transcriptions (Brinkmann & Kvale, 2015, 313-315). Throughout the process of transcribing oral speech into written form, I observed certain challenges that arise due to the nature of spoken language. Oral speech often includes repetitions, digressions, pauses, and filler words such as "hmm," which can make it difficult to comprehend when presented in written form (Brinkmann & Kvale, 2015). To address these challenges, I developed a method to convert the spontaneous oral speech into a more readable and understandable written form. This involved editing and refining the transcription to make it clearer and more concise while preserving the meaning and intent of the speaker's message. The purpose of this method was to ensure that the final transcription was accurate and easy to understand for the reader. By eliminating confusion and improving the clarity of the written text, I believe I was able to effectively

communicate the key messages of the oral speech in a way that was both informative and engaging.

Ensuring the participant's confidentiality was done by having the Norwegian Center for Research Data (NSD) approve the research project prior to inviting participants to the project. I received the approval in September 2023 (see Appendix 1). As part of the research project, all participants received a detailed letter containing information about the study. The letter outlined the purpose of the project and what was expected of the participants. In addition, each participant was requested to sign a consent slip indicating their willingness to participate in the research study. The consent form will include information about the study's purpose, the data collection process, the confidentiality procedures, and the right to withdraw from the study at any time. The consent form also included my contact information, should any of the participants have questions or concerns about the study. The consent slip was provided as an attachment to the letter (see Appendix 2). Any identifying information, such as the names of schools or teachers, was removed from the data before analysis. Before the interview began, all participants were informed that their conversations would be recorded using Nettskjema, a safe and secure platform provided by the University of Oslo. The use of this application guarantees the privacy of the participants as all data will be stored on password-protected computers and will only be accessible to the researcher. The application Nettskjema is known for its ability to maintain data security. In order to protect the privacy and anonymity of the individuals involved in this thesis, I have assigned them the pseudonyms T1, T2, T3, and IT1. By doing so, I aim to maintain confidentiality and ensure that their personal information remains undisclosed.

3.4 Limitations of research

According to the UNESCO report, a significant percentage of teachers expressed insecurity about teaching sustainable development and climate change, citing a lack of knowledge and confidence. This finding piqued my interest in investigating whether Norwegian teachers share the same sentiment. However, I conducted a study with a relatively small sample size, which means that the findings cannot be generalized. Broader results are demonstrated by the representation of both public and private schools across four schools in three municipalities. This means that the findings presented here are a result of a comprehensive analysis that takes into account a diverse range of educational institutions. The inclusion of both public and

private schools, as well as representation from four distinct schools across three different municipalities, provides a more comprehensive and nuanced perspective on the subject matter. This means that my study can provide valuable insights into the values, beliefs, and thoughts of teachers. It is worth noting that the selected participants will represent only a fraction of the total number of EFL teachers out there, but they could nevertheless provide valuable insights. Therefore, there are limitations to the generalizability of the results, and these should be carefully considered when interpreting the findings. These insights can aid in the development and implementation of more effective teaching strategies concerning climate change and sustainable development. Even though my findings cannot be generalized, there are many advantages to conducting qualitative research. By using qualitative research, I can explore teachers' attitudes toward teaching about climate change and sustainability in-depth and gain a better understanding of their perspectives.

Brinkmann and Kvale (2015) argue that the semi-structured qualitative interview offers several distinctive advantages from a phenomenological perspective. Firstly, they write that qualitative interviews are valuable because of their ability to provide researchers with privileged access to people's essential experiences of the lived world (pp. 32-37). This means that through my research, I can uncover first-hand accounts of what it is like to live in a particular context, how people make sense of their experiences, and what factors shape their attitudes and behaviors. According to Brinkmann and Kvale (2015) state that conducting an interview can help one understand the essential themes of the subject's world that one wants to study (pp. 32–37). As the researcher, I can access what my informants say and how they say it. I can gain valuable insight into meaning and factual levels by interpreting vocalization, facial expressions, and other bodily gestures. As thematized by Brinkmann and Kvale (2015), I made sure to seek to formulate the implicit message and "send it back" to my subjects to collect an immediate confirmation or disconfirmation of the interpretation of what my interviewee was saying (pp. 32-37). Overall, qualitative interviews offer a rich and insightful means of exploring the human experience. By engaging participants in a collaborative and respectful conversation, I can gain a deep appreciation of the complexity and diversity of individuals' perspectives and experiences (Brinkmann & Kvale, 2015, pp.32-37).

There are those who criticize interview research, claiming there are fundamental problems within the method itself. On the other hand, some objections stem from a limited comprehension of the value and potential of conversation as a research tool. However, some

of these objections may arise from a need for more understanding about the usefulness and potential of conversation as a research tool (p. 197). I considered these objections as I decided on my interview questions. Although these objections seem like potential pitfalls, being aware of them can be useful to avoid any issues.

According to Brinkmann and Kvale (2015), although some people raise objections to qualitative interview research the objections can be reversed and interpreted as pointing to the strong points of such research. The power of the interview lies in its ability to access the subject's everyday world. The use of the subjective perspective is not necessarily a negative bias. In fact, the personal perspectives of both the interviewee and interviewer can provide a distinctive and receptive understanding of the everyday life world. By using leading questions in a controlled manner, well-controlled knowledge can be obtained. Multiple interpretations can enrich the meanings of the everyday world, and the researcher is the most sensitive instrument available to investigate human meanings. The explorative potential of the interview can open up qualitative descriptions of new phenomena. Validating and generalizing from interview findings can lead to alternative modes of evaluating the quality and objectivity of qualitative research (p. 199).

As I researched teachers' attitudes and thought processes, I believed conducting an interview would be the most effective method. Worth noticing is that Brinkmann and Kvale (2015) present ten standard objections to the quality of interview research. These objections are not just limited to the interviewer's skills but also encompass epistemological and ethical concerns in obtaining knowledge through interviews (pp. 196-199). The standard criticism of qualitative research interviews concerns that the interview is not

1. scientific, but only reflects common sense.
2. quantitative, but only qualitative.
3. objective but subjective.
4. scientific hypothesis testing, but only explorative.
5. a scientific method because it is too person dependent.
6. trustworthy but biased.
7. reliable because it rests on leading questions.
8. intersubjective because different readers find different meanings.
9. valid as it relies on subjective impressions.

10. generalizable because there are too few subjects (Brinkmann & Kvale, 2015 pp. 196-199).

These criticisms, however, do not negate the importance of interview research, but rather they highlight the need for careful consideration of the research process to ensure its validity and reliability. The importance of conducting interviews in research cannot be underestimated. Interviews provide unique insights into attitudes and thought processes. While it is true that interview research has been subject to criticism, it is important to acknowledge that these criticisms do not detract from the incredible value that interviews can bring to research.

4 Presentation of results

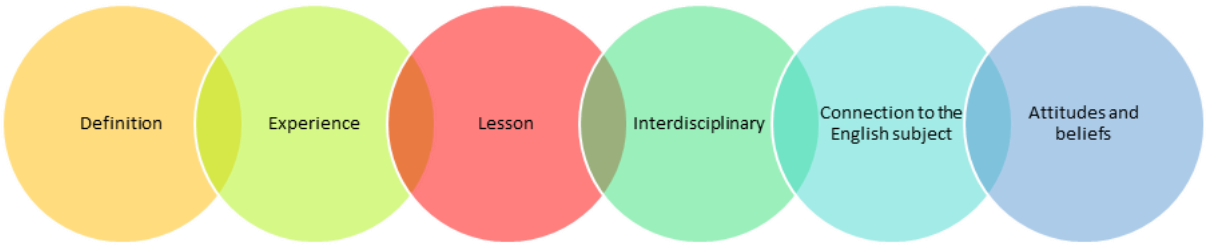
In this chapter, I will be sharing the findings of the research conducted in this thesis. The results have been categorized thematically based on the codes generated from the data analysis. This approach allows for a more detailed and comprehensive understanding of the results and a clear and organized presentation of the data.

After conducting interviews, the data collected was carefully analyzed using both conventional and directed content analysis approaches within the qualitative content analysis method (Hsieh & Shannon, 2005). In the conventional content analysis, I developed codes, categories, and themes from my textual data. Combined with the directed content analysis, I started with my preexisting theory and utilized the data to support the theory. The aim of this approach was to carefully evaluate and extract meaningful insights from the data that was gathered from the interviews. By using these methods, I could identify key themes and patterns that emerged from the data, providing insights into the research topic. The initial stage of analyzing the collected data involved transcribing it. This process entailed carefully converting all the recorded information into written format, which would serve as the foundation for further examination and interpretation. "Transcribing interviews from an oral to a written mode structures the interview conversations in a form amenable to closer analysis and is in itself an initial analytic process" (Kvale & Brinkmann, 2015, p. 206). The process of transcription was carried out meticulously using the function provided on Nettskjema.no. This ensured that all the information obtained during the interview was accurately recorded and captured in its entirety. The transcription was conducted on the day following the interview, thereby minimizing the chances of errors and ensuring that the data was transcribed while still fresh in my memory.

The theory provides the predetermined codes for analyzing interviews, outlined in Figure 3 below, regarding attitudes and beliefs, teacher cognition definition (Borg, 2003), and experience (Chawla, 2007). During the research, the interviews conducted were semi-structured which means that the questions and directions of the conversations varied from one interview to another. Due to this variability, it was challenging to start analyzing the data instantly using the predetermined codes. To overcome this challenge, I followed the conventional content analysis method (Hsieh & Shannon, 2005). This method required me to go through all the interviews carefully to gain a comprehensive understanding of what each

interview provided to the study. Through this process, I was able to identify themes, patterns, and key concepts that emerged from the data. In addition to identifying themes, I also aimed to gain a more holistic understanding of the interviews. Therefore, I analyzed the data by considering the context of the interviews, the participants' backgrounds, and the overall research objectives. This approach helped me gain a more in-depth understanding of the data and provided a foundation for further analysis (Hsieh & Shannon, 2005, p. 1279).

Figure 3: Predetermined codes



To proceed with the analysis, I started by carefully going through the transcriptions and marking important parts that seemed to relate to the predetermined codes. These codes were based on the theoretical framework (Hsieh & Shannon, 2005) and questions outlined in the interview guide. As suggested by Hsieh & Shannon (2005, p. 1281), this approach to coding can help to ensure that the data is analyzed systematically and efficiently. Additionally, highlighting significant texts can aid in increasing the reliability of the analysis, as noted by Hsieh & Shannon (2005, p. 1282).

In conducting my analysis, I opted to use color coding as a means of quickly identifying and marking relevant data based on predetermined codes outlined in Figure 3. The use of color coding is a well-established strategy in directed content analysis (Hsieh & Shannon, 2005, p. 1282), but I also employed a slightly different approach. This allowed me to gain a more comprehensive understanding of the data and recognize the complexity of the participants' responses. As the participants discussed various aspects related to the different components important for this study in several of their responses, color coding served as an essential first step in the analysis process (Hsieh & Shannon, 2005, p. 1281). I was able to organize the statements made by the participants in the interview regarding the various subjects in the interview guide. This task involved using the traditional content analysis method, which helped me to effectively categorize the data and draw meaningful insights. While color coding the data, I read through the text meticulously to determine if any codes could be identified

from the information that were not included in the predetermined codes based on theory (Hsieh & Shannon, 2005, p. 1279).

I began categorizing the data into codes with the help of a handcrafted table after reading and color-coding the texts based on predetermined codes. I followed Hsieh and Shannon's (2005) recommendation to categorize each utterance to determine if new codes were necessary (p.1281). I also checked for any statements that could fit into multiple categories and broke them down to make categorization easier. Any data that did not fit into any codes was closely analyzed to determine the correct category or was considered irrelevant. The participants' responses were aligned with the research question and theoretical framework, allowing for easy integration of relevant data into predetermined codes based on the theory and interview guide questions. The following is a detailed presentation of Figure 3, including the codes used in the analysis and examples of the participants' contributions. This table serves as a comprehensive reference for the research findings, providing insight into the various codes applied during data analysis and highlighting specific examples of how each participant contributed to the study.

Table 2: Detailed overview of Figure 3

Code	Description	Example
Defining “sustainable development”	How do the teachers define sustainable development?	T1: " It's a big question. When I think about it, it's probably a development where we don't drain all our resources". T2: "I think of the term sustainable as something enduring". T3: "Well, that's a difficult question, actually. But I think that the idea of something being sustainable is that it should last for a while and be beneficial in a good way.
Sustainable Development Education	What experience do the teachers have with teaching sustainability?	IT1: "No. Naturally, I think that most state education systems are mainly focused on creating compliant workforces. And when I think back to me learning how to teach, it wasn't focused on addressing contemporary issues, more on how to develop someone's language skills, develop someone's mathematical skills. T2: "It happened that we read books dealing with the themes, but not anything specifically focused on sustainability." T3: They only briefly touched on the subject when working with new curricula and curriculum renewals, where it became a recurring theme over time. However, they did not receive any specific training or education on the topic.
	Did you learn about climate change in your education?	T1: was able to attend a voluntary seminar, which was offered once in the five-year duration of teacher education. It is worth noting that the seminar was generally focused on the subject matter and not specifically in English. T2: "It happened that we read books dealing with the themes, but not anything specifically focused on sustainability. IT1: "No. Naturally, I think that most state education systems are mainly focused on creating compliant workforces".

Teaching Sustainable Development	Can you describe a good lesson you had about climate change? It doesn't have to be specifically in the English subject.	T1: "The grade I've been working with in recent weeks has been focusing on recycling". T2: We talked a lot about the differences in how we live here in Norway compared to other countries, for example. It was a very engaging project, and perhaps I feel that children and young people, especially those in middle school, are very concerned about these issues, maybe more than we were when we were younger. IT1: So, I wouldn't necessarily say that I've ever taught a exclusive lesson about climate change, but I've taught children how to research to find an answer to a question they have using climate change as a model.
Interdisciplinary approaches to sustainable development	Sustainable development is not an interdisciplinary subject in the English subject. What do you think about that?	T1: It's strange. I think it should be in all subjects, actually. Much of the information about it is in English, and the platforms children and young people use provide a lot of information in English. So, I find it strange that it's not integrated into the English subject. It should be included, absolutely." T3: The challenge, however, is that it becomes somewhat up to each teacher and each school how it is done. So, in that sense, it should probably be anchored in the curriculum. Then, it is easier to ensure that it is done consistently.
Sustainable Development and the English Subject	If you were to link sustainable development or climate change to a theme in the English subject, which part would you think it is natural to connect it to?	T1: "At least, if I were to take it from the grade I'm currently teaching, it could be very useful to connect it to literature, both non-fiction and fiction. T2: "Definitely literature. Literature is a somewhat expanded form, perhaps. Not just written text, but perhaps that you can work not only with novels but also with complex texts, with music or video". T3: "I immediately think that perhaps, or at least if I had worked at a slightly higher grade, and it was possible to discuss and reflect a bit more, then maybe I would look at it with culture.
Reported attitudes and beliefs on teacher readiness	Do you feel prepared to teach about sustainability and climate issues? Why? Why not? If yes, do you feel ready based on the education you have received? Or is it more personal interest? And if not, what do you need to feel better prepared?	T1: "It's a bit mixed. I feel somewhat prepared to teach the basics". T2: "I think I am prepared, but not because we covered it in teacher education; we had extremely little of that. T3: If I were to answer on the spot, I probably wouldn't feel prepared to teach about it. I feel I know too little about it myself, actually".

4.1 Interview results

The primary objective of using interviews in this research was to explore the cognition, thoughts, and opinions of teachers when it comes to teaching about sustainability and climate change (Borg, 2003 pp. 80-81). I also wanted to try to understand how teachers view their ability to establish climate-ready classrooms, and what their attitudes towards the task are. By conducting interviews, the study aimed to gather insights into the approaches and techniques employed by teachers, the challenges they face, and the effectiveness of their teaching methods. I conducted interviews with four English teachers who had varying levels of education and experience. Two of the teachers taught English to year 2 pupils, while one taught year 5 and the last one taught year 6. If some of the teachers are not represented in some of the results, it is because the interviews veered off-topic during the course of the

conversation. Three of the interviews were conducted in Norwegian, and I have translated the quotations from these sections.

4.1.1 Defining “sustainable development”

During my interview, I asked the participants to define sustainable development. As I asked them to provide their own definitions, it became clear that this concept is complex and multifaceted. The participants' responses varied, reflecting the diverse perspectives and experiences they brought to the discussion. However, some common themes emerged from the conversation. All four teachers seemed to agree that sustainable development involves treating our planet in a manner that guarantees that future generations will inherit the earth in an equal or better condition. They expressed the belief that this requires preserving natural resources, reducing pollution, and promoting social and economic development that benefits everyone, not just a select few. IT1 started by presenting the quote, "We do not inherit the earth from our ancestors; We borrow it from our children," to describe his opinion on sustainability. This quote highlights IT1's strong personal interest in sustainability, though he did not mention climate change specifically. Whereas sustainability can be referred to as the capacity to thrive and progress while ensuring the preservation of natural resources for future generations, climate change more specifically refers to the long-term alteration in average weather patterns that occur over several decades or more. Climate change is, in my opinion, a top of the mind topic mentioned when asked about sustainability. However, as IT1 does not mention this topic once during his interview, it makes me realize that sustainability is a huge topic, with many different aspects to discuss. Depending on who you ask, some aspects will be more important, and some aspects less important, based on personal interest.
In response to the question of what sustainable development means to her, T1 said:

> It's a big question. When I think about it, it's probably a development where we don't drain all our resources. We use them in a way that prevents depletion, and we avoid generating unnecessary waste and pollution. We should not harm nature to the extent that it cannot be used for anything else later.

This highlights the importance of preserving the environment for future generations. When asked to define sustainable development, T3 stated the following:

> Well, that's a difficult question, actually. But I think that the idea of something being sustainable is that it should last for a while and be beneficial in a good way. So that it benefits everyone, and also in the future. For sustainable development, it is important to focus on the environment and climate. In schools, this can be achieved by teaching pupils about environmentally friendly practices.

This suggests that she highlighted the importance of education in shaping the attitudes and behaviors of future generations towards the environment. Overall, the teachers seemed to agree that sustainable development requires everyone to take responsibility for protecting the environment and that this responsibility should ensure that future generations inherit an earth that is in the same or even better condition than now.

T2 likewise emphasized the importance of considering the well-being of future generations:

> I think of the term sustainable as something enduring. When considering the world, life, and the earth, I believe we should treat it in a way that doesn't deplete it, ensuring that things are not lost for those who come after us. But I also think of sustainability in a way that, in an educational context, for example, involves things we can see are viable and that we can engage in for a long time without stopping. So, I don't necessarily think only on a grand scale about the world and the earth but also down to what we work with in the classroom. But sustainability, to me, is a term that says a lot about endurance, that you can sustain it for a long time.

So, to T2, sustainability means using the world's resources in a way that allows them to be replenished. It involves activities that are both viable and engaging over the long term and emphasizes the concept of endurance.

4.1.2 Sustainable Development Education

In the next question I asked the participants if they learned to teach about climate change in their education. Two of the teachers reported that they had not received any training on the topic of sustainability during their teacher education. However, T1 had been able to attend a voluntary seminar offered once in the five-year duration of their teacher education. It is worth

noting that the seminar generally focused on the subject matter and not specifically the English subject.

T2, who graduated from a teacher education program in 2022, mentioned using English children's literature in their English class. "It so happened that we came across books that touched on themes like our planet and nature, but nothing specifically focused on sustainability".

IT1, who did not learn to teach about climate change, said, clearly letting his personal interest in sustainability shine through:

> Naturally, I think that most state education systems are mainly focused on creating compliant workforces. And when I think back to me learning how to teach, it wasn't focused on addressing contemporary issues, more on how to develop someone's language skills, develop someone's mathematical skills. So, very disciplinary and very boxed and very sort of assessment focused. I don't feel like my education focused on creating a good person, a good citizen, contrary to when I started working abroad and working in PYP and IB especially, where the focus is to make the pupils a good person. And obviously within that comes an element of sustainability and the need to act on issues that are affecting us all and holding that notion of I'm passing something on to somebody else, so I need to make sure it's in good condition.

T3 admitted to having limited knowledge about climate change and sustainability and thus had very little to contribute to discussions on the topic. The only time T3 had heard about it in her training was during the development of new curricula or the renewal of existing ones, where climate change was a recurring theme.

4.1.3 Interdisciplinary approaches to sustainable development

Sustainable development is not an interdisciplinary subject in the English subject. I asked the teachers for their thoughts on this. T1 replied:

> It's strange. I think sustainable development should be discussed in all subjects, actually. Much of the material on sustainable development available in online search

> platforms, where children and young people tend to search for information nowadays, is already in English. So, I find it strange that it's not integrated into the English subject. It should be included, absolutely.

T3 also shared their thoughts on including sustainable development in the English subject:

> I think we should. We work a lot with interdisciplinarity at our school; we have divided the year into humanitarian aid and life skills, sustainable development, democracy, and citizenship, and then we work interdisciplinarity in all subjects. So, we do include it. The challenge, however, is that it becomes somewhat up to each teacher and each school how it is done. So, in that sense, it should probably be anchored in the curriculum. Then, it is easier to ensure that it is done consistently. Some teachers are very passionate about it, others are not, and then they might choose something else instead. So, I think, yes, it should be done regardless, but ideally, it should be anchored in the curriculum. I think it belongs in all subjects. I remember when I had English in school, that we wondered why it wasn't included. We discussed it with our lecturers. We studied a bit on why it's not included in English. It should have been included because it is relevant and can be connected to other topics.

T2 reported that she believes English provides access to a greater amount of information compared to Norwegian, making it more practical for finding texts and videos. She also claimed that English could be useful for interdisciplinary themes, such as sustainable development, due to the challenges faced by English-speaking countries related to climate and other issues. Lastly, she expressed that she finds the exclusion unfortunate.

The three teachers seemed to agree that sustainable development should in fact be included in the English subject, I recognize that none of them actually suggested any concrete ideas on how to do so. This might be because they feel like they need more credible knowledge in the subject themselves, and don't feel comfortable presenting concrete ideas based solely on their personal interest in the subject. Ideally, the teacher's education should have provided them with a set of tools helping them to get more creative around ways to present sustainable development to the pupils in the English classes. Preferably, a teacher should be equipped with a range of resources that would enable them to come up with innovative approaches for teaching sustainable development to their pupils.

IT1, who teaches at an international school, explained how they already work interdisciplinary with all subjects. Moreover, he explained how the primary years program includes six units: sharing the planet, how the world works, how we organize ourselves, who we are, where we are in place and time, and how we express ourselves. Each year, one unit is taught from each of these themes. For example, the focus is on sustainable development and related concepts that can be applied to different situations. The approach to learning is skill-based, and IT1 reported believing that sustainable development should be taught in all subjects to ensure consistency and relevance. T2 also reported that she

4.1.4 Sustainable Development and the English Subject

If you were to link sustainable development or climate change to a topic in the English subject, which part would you think it's natural to connect it to? T1 replied:

> At least, if I were to take it from the grade I'm currently teaching, it could be very useful to connect it to literature, both non-fiction and fiction. It's a way they can relate to the themes in a nice way - by reading about it through children of their own age and through storytelling. So, I think that could definitely be wise.

T2 shared T1`s opinion:

> Definitely literature. Literature in a somewhat expanded form, perhaps. Not just written text or novels, but also with multimodal texts, with music or video. For that part of the subject, primarily, I would focus on that. It's a theme that works well when they get a bit older, but when they are younger, there are some concepts and words that may be challenging. So, it's very nice to use in oral discussions. Look at pictures and talk about them, go for a walk in the local area and speak English and observe things. I really like using literature, so that's where I would have the most focus.

T3 did not mention literature first, but replied:

> I immediately think that, or at least if I had worked at a slightly higher grade where it was possible to discuss and reflect a bit more, then maybe I would look at it together

> with culture. That is, in different ways of living in different countries. We have also used different websites like Dollar Street. I don't know if you've heard of it, but it's a website where you can see and meet different families and search different parts of the country and see a bit about how they live and discuss a bit about differences in both climate, environment, goods, yes, all sorts of things.

Secondly, T3 mentions using literature:

> But you can also use literature and picture books during the breaks and with the little ones, something that can be about the theme. I think picture books are so nice to use in the English subject on all sorts of themes if there is literature that is relevant, yes. And talk about it and do tasks from there.

Not surprisingly, all the teachers mention using literature to introduce sustainability for the class. As I mentioned in chapter 1, research shows that literature in the English primary classroom is a useful tool for teaching climate change and sustainability issues to the pupils (Kleppe, Lyngstad, Moen & Sandhaug, 2023). English literature in the primary classroom could offer several ways of working with sustainable development and climate change. For example, after reading a text, the teacher can facilitate a discussion and encourage pupils to ask each other questions about what they just read.

4.1.5 Teaching Sustainable Development

When asked to describe a good lesson the teachers had held about climate change, T1 replied:

> The grade I've been working with in recent weeks has been focusing on recycling. While I'm not responsible for planning, I've been involved in parts of it. We've worked very holistically on the topic, and the children are starting to understand it quite well now. Before the fall break, the whole grade went on a trip to the waste station in the municipality, where we saw different types of waste and talked to the people working there. I consider that very, very successful because they still remember a lot from it and incorporate it into their lessons.

T2 described his best lesson on climate change:

> Two years ago, when I was teaching middle school, we worked a lot on sustainability and climate in science. I don't remember the details, as it was over a long period. But we worked a lot on how the school can take care of itself, the local community, our municipality, our country, and then the world. We extended our focus. We talked a lot about the differences in how we live here in Norway compared to other countries, for example. We made many comparisons, but it was in the context of science. It was a very engaging project, and perhaps I feel that children and young people, especially those in middle school, are very concerned about these issues, maybe more than we were when we were younger.

T2 expressed her opinion that the topic was engaging because it involved many people, and it was somewhat related to them all. However, the relevance of the topic was most noticeable in the day-to-day life of the school and the schoolyard, and how we can take care of it.

T3 had not held any lessons on climate change:

> No, not in the English subject, at least. And very little in general. But we have had a lot of focus on everyday things sorting waste. With the little ones we have to bring it down to a very low level, especially when they are in first and second grade. At our school, we have our own environmental group, with three representatives from each grade. They attend meetings a few times a semester. As part of the whole school's work, not just in one class, but the school's work. Where they go in and talk a bit about what the school can do better for both the environment and climate. Then, they bring it to their respective classes and communicate it. So, we have, among other things, a focus on waste sorting. We have become thorough about it, going through and asking pupils, and the pupils can show each other. That's mostly the focus, if we think about the environment and climate.

T3 mentioned that she has yet to teach any lessons on climate change, neither in the English subject nor in general. However, the school has an environmental group with three representatives from each grade who attend meetings several times a semester. The group discusses and communicates the school's role in promoting a sustainable environment to their respective classes. The school also frequently asks its pupils about waste sorting and

encourages them to show each other how to do it. Overall, the school's efforts towards environmental education are aimed at promoting a sustainable future by instilling good habits in young children.

IT1 started talking about a project he had done with the pupils:

> The pupils decide on an issue of importance. So, I wouldn't necessarily say that I've ever taught a discrete lesson about climate change, but I've taught children how to research to find an answer to a question they have using climate change as a model. So, the first thing that we do is provocation. You've got 30,000 days on the planet. What are you going to do with it? What's your purpose? What's your mission related to sustainability? And then they basically come up with some questions, some key questions that are going to drive the whole inquiry forward. And then the vision of what they want the world to look like or our community to look like. So, they develop their skills and aim to change people's minds and thinking.

IT1 finished by saying that what the pupils can achieve when you empower them is impressive. According to IT1, the key to their success was empowering the pupils by providing them with the resources they required to complete the task. IT1 also elaborated on his teaching methodology, which involved modeling the writing process and going through the text with the pupils to ensure that they understood the task and were able to complete it to the best of their abilities.

4.1.6 Reported attitudes and beliefs on teacher readiness

I asked the teachers about their attitudes and beliefs on to what extent they felt prepared to teach about sustainability and climate issues: Why? Why not? If yes, do you feel ready based on the education you have received? Or is it more personal interest? And if not, what do you need to feel better prepared?

T1 answered, “It's a bit mixed. I feel somewhat prepared to teach the basics. As I mentioned, I'm a bit unsure about how much we covered in college, so I have to say it's more of a personal interest.” When asked how to feel better prepared T1 replied:

> The school should also provide some guidelines on how we should handle it. These can be incorporated into thematic plans, for example, or other programs that the school aligns itself with. In our municipality, we have something called the Green Flag, which focuses on recycling, growing our own food, and the environment around us. Also, reducing traffic and such. So, I think there need to be some guidelines for that to be addressed. And then it might be easier to delve into it and learn more about it.

T2 was more optimistic about teaching her pupils on climate issues:

> I think I am prepared, but not because we covered it in teacher education; we had extremely little of that. Rather, it's because I find it important to talk about. Also, I have social studies, and I think social studies and English are two subjects that combine very well. There are global challenges we work with in social studies that we can discuss in the English lesson as well. But, as I mentioned at the beginning, it's very dependent on the individual. Because I think it's important, I feel that's what you do. But it's not thanks to my teacher's education.

T3, on the other hand, did not feel prepared to teach about climate change:

> If I were to answer on the spot, I probably wouldn't feel prepared to teach about it. I feel I know too little about it myself, actually. So, I would have to delve into it more and really prepare for it. But if I were to talk about it, it would be because of personal experience, not because of what I learned in teacher training. In summary, I would need to prepare a lot more, delve into it more, and at least present it in a way that makes it understandable and simple.

IT1 explains that he does not feel prepared to teach climate change based on his training. He thought the training was there to help children have basic language and some math skills so they could be compliant workers. However, he explains that he has had the opportunity to receive training in developing skills and conceptual and inquiry-based teaching. This has equipped him with many resources, including the Sustainable Development Goals (SDGs) website. He claims that this website is an excellent resource that offers a variety of teaching materials for different grades and languages, such as Spanish, Portuguese, and some Asian languages. The website contains lessons and activities that explore various themes related to

the SDGs, making it easier to plan the teaching accordingly. Moreover, he reported to believe that his prior work experience, collaborations, and educational courses have driven him toward exploring the SDGs and incorporating them into his teaching curriculum. However, he does not think he would have had the same chance to do so if he had stayed in the UK a decade ago and not relocated. He explained how he believes it all comes down to resources, opportunities, and the people you work with. In international schools and within the IB curriculum, teachers are given the freedom to prioritize what is necessary for their students and what is relevant at the time.

In summary, I found a distinct separation in teachers' attitudes and beliefs regarding their readiness to lecture about sustainability. On the one hand, there were those who had a personal interest and passion for the subject and, therefore, felt well-equipped to teach it. On the other hand, there were those who lacked the same level of interest in the topic and, therefore, felt less confident in their ability to deliver quality lectures. This divide is unsurprising since people tend to be more confident about discussing topics that catch their attention and curiosity and that they feel equipped to teach. Several of the teachers also included 21st century skills and working interdisciplinary with climate change.

Summary (interview results)

In this chapter, I have presented the results of the analysis conducted on the data collected through the interviews of the four teachers. The purpose of presenting these findings was to provide insight into the reported views of the teachers regarding the establishment of climate-ready classrooms and their attitudes toward this task.

To summarize the interviews, the teachers' definitions of sustainable development varied, but they all agreed that it involves treating the planet in a way that ensures future generations inherit an earth in an equal or better condition. They emphasized the importance of preserving natural resources, reducing pollution, and promoting social and economic development that benefits everyone. The teachers emphasized the importance of education in shaping the attitudes and behaviors of future generations towards the environment. Finally, they believed that sustainability means using the world's resources in a way that allows them to be replenished and involves activities that are both viable and engaging over the long term.

Two of the teachers mentioned that they had not received any training on sustainability during their teacher education. One of them had attended a voluntary seminar that focused generally on the subject matter. One teacher expressed their personal interest in sustainability and how the education system should focus on creating good citizens through teaching them about sustainability. Another teacher admitted to having limited knowledge about climate change and sustainability and had only heard about it during the development of new curricula or the renewal of existing ones.

Further, the topic of sustainable development and its integration into the English subject was addressed. The teachers were asked concerning their thoughts on the matter, and two of the teachers agreed that sustainable development should be included in all subjects, including English. One of the two teachers suggested that it should be anchored in the curriculum to ensure consistency. While both the teachers agreed on the importance of this subject, none offered any concrete ideas on how to include it in English classes. This might be due to the requirement for teachers to possess credible knowledge and resources to teach sustainable development effectively. The third teacher I asked, who works at an international school, shared how their school already works interdisciplinarity with all subjects, including sustainable development, to ensure consistency and relevance.
Moreover, the teacher's readiness to teach about sustainability was discussed. One of the teachers feels somewhat prepared, two of the teachers feel prepared and are optimistic and believe in its importance, and the fourth teacher feels unprepared and would need to delve more into it. The teachers' reported attitudes indicate a clear division between those who have a personal interest in the subject and those who do not.

When asked how to introduce the topics to the young pupils, three of the teachers agree that literature is a useful tool. They suggest using different forms of literature, such as novels, multimodal texts, and picture books. Additionally, they mention discussing the topic through culture and different ways of living in different countries.

T1 took her students on a sustainability-related excursion, which she claimed enhanced learning retention. T1 and her class focused on recycling on the field trip to the local waste station. T2 taught sustainability and climate change in science, emphasizing the school's role in taking care of the environment. T3's school had an environmental group that focused on waste sorting. IT1 empowered pupils to research climate change and develop their skills to

change people's minds and thinking. Overall, the teachers aimed to make the lessons engaging and relevant to the students' daily lives.

The results presented in this chapter will help me discuss teachers' preparedness to teach about climate change and sustainability, as well as their reported beliefs and attitudes in chapter 5.

5 Discussion

In this chapter, I discuss how teachers of English in four different primary schools in Norway view their ability to create classrooms that are climate-ready and their reported attitudes toward the task based on results collected from interviews (Chapter 4) and theoretical framework and previous research (Chapter 2) and topic and context (Chapter 1). My findings are then compared to previous literature and theory. The overarching question of how teachers could create climate-ready classrooms will also be discussed. The chapter is organized by the subheadings outlined in the presentation of results chapter (4). Section 5.1 will discuss the teacher's definition of sustainable development; section 5.1 will address their experience; 5.3 concerns their reported views on sustainable development not being an interdisciplinary topic in the English subject if the teachers feel prepared to teach about sustainability and climate issues are discussed in 5.4, in 5.5 the teachers reported thoughts on linking sustainable development or climate change to a theme in the English subject are addressed. Lastly, in 5.6, the reported lessons will be discussed.

5.1 Defining “sustainable development”

The term "sustainable development" referred to in LK20 aims to protect life on earth and fulfill the needs of people who live on it without compromising the potential for future generations to meet their own needs (Norwegian Directorate for Education and Training, 2017, p.9) (see section 2.2). According to the Norwegian Directorate for Education and Training (2017), working on this topic will enable pupils to develop the ability to make responsible choices and act with environmental awareness. They will appreciate that every individual activity and choice is significant (p.9).

As addressed in chapter 1.1 the issue of sustainability is quite complex and multifaceted, and it is often considered a wicked problem, as Dillon et al. (2016) have pointed out (pp. 450-454). When the teachers were asked to define the term, they all agreed that sustainable development means taking care of our planet so that future generations can inherit it in the same or better condition. This involves safeguarding natural resources, minimizing pollution, and fostering social and economic progress that benefits all members of society, not just a privileged few. However, as the interview questions progressed, it became apparent that some of the definitions provided by the teachers were lacking in clarity and nuance. Their

definitions were not detailed enough to fully capture the complexities of sustainable development, and it was clear that more in-depth knowledge and expertise on the subject would be needed to understand the terms complexity fully. It was evident that T1 and T3 experienced a sense of being overwhelmed when tasked with defining the term (Chapter 4.1.1). T1 started by saying it is a “big question” indicating that the term can feel complex and difficult to grasp without sufficient in-depth knowledge. T3 also expressed similar thoughts when defining the term "Well, that's a difficult question, actually” (Chapter 4.1.1). When asked to define sustainable development, T1 and T3 both expressed insecurities concerning the task. However, both provided some insightful perspectives on the concept, ultimately aligning with the definition in LK20 (see section 2.2).

The viewpoint of sustainable development and climate change as complex and wicked problems, as stated by UNESCO, Dillon et al. (2016), and the Norwegian Directorate for Education, is visible in T1 and T3s statements. Both T1 and T3 only have two years of teaching experience. T2 and IT1, both with over ten years of teaching experience, did not express any concerns similar to T1 and T3. The finding from the UNESCO report *Getting Every School Climate-ready* state that experienced teachers are more confident in their ability to teach climate change than newly recruited teachers (UNESCOa, 2021, p. 6) (see Chapter 2, section 2.1). This finding is consistent with the results of my own research.

This reflects the significance of a comprehensive and nuanced interpretation of the term, which is crucial for teachers to have in order to provide satisfactory support and guidance to their pupils.

5.2 Sustainable Development Education

Chawla (2007) suggests that individuals who promote or raise awareness about the environment are often motivated by their childhood experiences with people and places (p.145). This highlights the fact that students may rely on their teachers to have a personal commitment to sustainability and climate change in order to receive adequate education on the subject. T2, T3 and IT1 recalled that they could not remember having undergone any training related to the environment during their teacher education. T3 reported having limited knowledge about climate change. The only time she had heard about it in her training was

during the development of new curricula or the renewal of existing ones, where climate change was a recurring theme. T1 was the only one reporting receiving climate change and sustainability training during her teacher education. T1 attended a voluntary seminar, which was offered once during the five-year duration of her teacher education. The seminar was a part of the general training program, not specifically in the English course. The seminar centered around the relationship between production, climate change, and education in general. On my follow-up question asking if T1 had learned about climate change in their English class, T1 responded that they had not. The *Learn for Our Planet* survey (see Chapter 2, section 2.1) revealed that more than a third of the survey respondents reported that environment-related content was not included in teacher training programs (UNESCOb, 2021, pp. 27-28). This finding is consistent with the results of my own research. For example, we can use primary school teachers with only a few years of experience or newly graduated ones. In my research, three teachers recalled having close to no training related to the environment, and two of them had no particular personal interest in the subject. The education their pupils receive could be of varying quality compared to a teacher with a lot of teaching experience and a personal interest in sustainable development and teaching Education for Sustainable Development (ESD).

5.3 Interdisciplinary approaches to sustainable development

As addressed in Chapter 2.2 civic science is an approach to problem-solving that involves a diverse group of stakeholders, including scientists, in a joint learning process. This collaborative effort aims to address wicked problems, which are complex and multifaceted issues that have no clear solutions. The approach recognizes the importance of including a diverse range of perspectives and experiences from all stakeholders, not just scientists. The goal is to work together to find innovative and effective solutions that benefit everyone involved. This demonstrates how one optimally should work with climate change and sustainability in the English primary classroom. The diverse group of stakeholders could represent various teachers with different knowledge, backgrounds, and experiences coming together to work interdisciplinary. By drawing on their differences, they can provide pupils with a multi-perspective approach to the subject matter. In addition, it is crucial to consider the pupils' thoughts and experiences when working with ESD. Different teachers may find ways to incorporate these thoughts and experiences in the teaching beneficially. By doing so, students can develop a more comprehensive understanding of the subject matter and be able

to apply critical thinking to a broader range of contexts. As UNESCO suggests, promoting a whole-school approach and including community engagement can be beneficial for effective ESD (UNESCOc, 2021, p.55). In today's educational situation, teachers need to work collaboratively in interprofessional communities. By doing so, they can share their knowledge, skills, and resources and, in turn, enhance their pupils' education quality. This kind of collaboration helps teachers stay updated with the latest teaching methods and technologies and can promote a sense of unity, alliance, and support among them.

T1 reported agreeing with this way of working with sustainable development and climate change in the English primary classroom. She thought it was strange that the interdisciplinary topic sustainable development was not included in the English subject curriculum. She continued to claim that sustainable development should be included across all the subjects in the Norwegian school, partly because a considerable amount of information about sustainable development is available online, and children and young people tend to search for information in English. This highlights what Fenner and Skulstad (2020) pointed out about the extensive English language materials available online. These materials could offer pupils multiple perspectives on curricular topics (see Chapter 2, section 2.2). T3 agreed with T1 and reported that her school uses an interdisciplinary approach. She added that they have divided the year into four themes: humanitarian aid and life skills, sustainable development, democracy, and citizenship. They work on these themes in an interdisciplinary way across all subjects. Finally, she shared that she thinks the challenge lies in the fact that it is up to each teacher and school to decide how to implement this approach. As a solution, she suggested anchoring the interdisciplinary subject to the English curriculum for consistency. As addressed in chapter 2, section 1, UNESCOc (2021) recommends that interdisciplinary topics should be integrated into the curricula of various subject areas and levels, and this is exactly what T3 proposes.

5.4 Sustainable Development and the English Subject

During the interview, the individuals were asked to identify a connection between sustainable development or climate change and a particular area within the English subject and provide their views and opinions on how these two significant issues could be integrated into the English curriculum.

T1 reported that connecting it to non-fiction and fiction literature would be beneficial based on the current grade she is teaching. By incorporating non-fiction literature, her pupils are exposed to a wide range of real-life situations and events that can help them better understand the world and its complexities. On the other hand, incorporating fiction literature can help students explore their imagination and enhance their creativity, allowing them to think outside the box and develop innovative ideas. In addition, adopting a deep ecological approach to literature can help students develop empathy for nature and animals (see Chapter 2, section 2.2). This can lead to a heightened awareness of the importance of environmental preservation. By fostering an appreciation for the natural world and its inhabitants, the pupils can become more environmentally responsible and take an active role in preserving the planet for future generations. T2 reported agreeing with T1 on the beneficial use of literature to this sustainable development in the English subject. However, she mentioned using literature in expanded forms including music or video. T3 has expressed an interest in exploring a cultural approach while reflecting upon the subject matter, particularly with regard to higher grades. She also suggested utilizing picture books as a tool to facilitate discussions regarding sustainability and climate change. Afterward, she suggested working with tasks and activities to delve further into the topic.

My study revealed that all the participants acknowledged the potential of using English literature in primary classrooms. They reported considering it an excellent opportunity to integrate sustainable development as a cross-curricular topic within the English subject. Such an approach could provide pupils with a holistic understanding of sustainable development. According to the claims made by Kleppe, Lyngstad, Moen, and Sandhaug (2023), English teachers at all levels should use literary texts to teach climate change and the loss of biodiversity (p.1). Adopting a deep ecological approach to literature can also help pupils develop empathy for nature and animals, as Chawla addresses. This can lead to a heightened awareness of the importance of environmental preservation and make pupils more environmentally responsible. By fostering an appreciation for the natural world and its inhabitants, pupils can take an active role in preserving the planet for future generations.

5.5 Teaching Sustainable Development

The four primary teachers participating in my study were asked to describe what they considered a successful lesson on climate change. One of the teachers, T2, stated that her

school incorporated interdisciplinary topics into all subjects. She recalled a middle school class where they worked on climate change over an extended period, allowing the students to work in-depth by including multiple subjects in the teaching of climate change. T2 elaborated on how they focused on how the school could care for itself, the local community, the municipality, the country, and finally, the world. By broadening their focus, T2 claimed that they examined differences in how they live in Norway compared to other countries. This approach includes 21st-century skills such as co-creation, where the teacher and the pupils engage in a dialogue that includes a lot of critical thinking and collaborative problem-solving (see Chapter 2, section 2.2). Encouraging students to engage in dialogue and work together to find solutions can help them develop valuable interpersonal skills and critical thinking abilities and gain a deeper understanding of the subject matter. T2's reported lesson on climate change demonstrates her approach to incorporating 21st-century skills, working in-depth, and interdisciplinary methods in her teaching. She was one of the teachers who reported having no inclusion of climate and sustainability-related content in her teacher training. However, T2 claimed to have a personal interest in the subject, and because of this interest, she felt prepared to teach sustainability and climate change in primary school (see Chapter 5, section 5.6).

T1 could not recall a successful lesson she taught on climate change, but she did report being involved in a project with her second-grade class that was planned by her colleague. T1 explained that the class went on a field trip to a recycling station in their municipality, which was the culmination of several weeks of lessons focused on recycling from a holistic approach. This aligns with Chawla's (2007) recommendation to take pupils outside the classroom and encourage them to explore nature through direct observation. Instead of solely learning about climate change and sustainable development from textbooks, we should allow them to experience nature firsthand and provide the necessary support (Chawla, 2007, pp. 149-151).

At the recycling station, the class saw different types of waste and talked to the people working there. Although it is concerning that T1 could not recall a successful lesson on climate change, her willingness and positivity towards learning from her colleague demonstrate her desire to improve. Working in interprofessional communities aligns with the approach of civic science, which emphasizes involving a diverse group of stakeholders when addressing complex issues like sustainability and climate change. The goal of this approach is

to find innovative and effective solutions that benefit everyone involved by utilizing each other's strengths to create an optimal learning environment for the pupils. Examining diverse viewpoints and experiences becomes crucial when dealing with complex issues such as sustainability and climate change. T1 reported being satisfied with the outcome of the field trip, as the students were able to retain and apply the knowledge they gained during the trip. The students still remember their experiences and what they learned and continue to incorporate them into their current lessons. This demonstrates how the field trip left a lasting impression on the students and helped them deepen their understanding of recycling. Generally, it could seem that pupils tend to remember more when learning in authentic environments, hands-on and in-depth exploring several 21st century skills.

T3 stated that she had yet to teach any lessons about climate change in English or any other subject. However, she emphasized that they focused on everyday activities such as waste sorting. According to T3, when teaching younger children, particularly those in first and second grade, it is essential to break down complex concepts and use simple language they can easily understand. T3 has not received any education on climate change in her school. However, the school has an environmental group that includes representatives from each grade level. The group conducts meetings to discuss and promote sustainable environmental practices. The school also encourages waste sorting and asks students to participate in it. The aim of these efforts is to help young children develop good environmental habits. This highlights the importance of interprofessional communities in schools. In this case, the school leaders have decided to adopt a whole-school approach, taking responsibility to provide students with an opportunity to work hands-on with sustainability and learn together, implementing all the essential 21st-century skills as outlined in Chapter 2, Section 2.2.

IT1 shared a project he conducted with his 6th-grade students. He explained that the students selected a climate change-related issue that was important to them. He then taught them how to research and find answers to their questions using climate change as a model. IT1 emphasized that he did not teach a lesson directly on climate change; instead, he taught the students how to research to find answers to their questions using climate change as a model. He went on to explain that students have 30,000 days on the planet, and it is essential to have a purpose and mission related to sustainability. He encouraged them to develop critical questions that would drive their inquiry and vision of what they want the world or their community to look like. IT1 emphasized that empowering the students by providing them

with the necessary resources was the key to their success with the project. IT1 also elaborated on his teaching methodology, which involved modeling the writing process and going through the text with the students to ensure they understood and completed the task to the best of their abilities. In IT1's lesson, it is evident that he emphasizes developing 21st-century skills among his students. These skills, as outlined in Chapter 2, Section 2.2, are teachable abilities and attributes that enhance ways of thinking, learning, working, and living in the world. Moreover, these skills aim to help students tackle complex and challenging problems posed by climate change, which are essential as they grow up and take on more significant responsibilities. In IT1's project, it is clear that several 21st-century skills, such as creativity and innovation, critical thinking/problem-solving, learning to learn/metacognition, communication, collaboration (teamwork), and information literacy, are included.

T1 claimed not to recall a successful lesson she taught on climate change; however, she reported on a field trip arranged by her colleague to the local recycling station in their municipality. T2 used interdisciplinary methods and 21st-century skills to teach climate change, including co-creation, critical thinking, and collaborative problem-solving. T3 emphasized the importance of using simple language and breaking down complex concepts for younger learners. She also reported that her school adopted a whole-school approach to promote sustainable environmental practices and encourage students to develop good environmental habits. Finally, IT1 emphasized the importance of involving diverse stakeholders and examining diverse viewpoints and experiences when dealing with complex issues such as sustainability and climate change.

5.6 Reported attitudes and beliefs on teacher readiness

I asked the teachers about their attitudes and beliefs regarding how well-prepared they felt to teach about sustainability and climate issues. I asked about the reasons why they felt prepared or unprepared. If they felt equipped to teach about these issues, I asked whether it was due to their education or personal interest. Moreover, if they felt unprepared, I asked what they needed to feel better equipped to teach about sustainability and climate issues.

T1 expressed mixed feelings about feeling prepared to teach climate and sustainability. However, she claims that she can teach the basics. She mentioned that during her training,

they only had one voluntary seminar on the subject, which is why she feels limited in her knowledge of the topic. Figure 1 (see Chapter 2, section 2.1) displays an interesting pattern where 39% of respondents covered Climate Change before service, 41% covered it during service, while a surprising 20% did not cover it at all (UNESCOb, 2021, p. 27). The report lacks information on the extent to which climate change was addressed in the education of the participants who reported that it was covered, which means that it is likely that the quality of the cover varied. The basics she does feel prepared to teach, she claims, are based on personal interest. In order to be better equipped to teach ESD, T1 explained that she believes the school should provide some guidelines on how to handle it. These guidelines could be integrated into the school's thematic plans or other programs. In the United Nations' list of actions for the education community, action number eight on the list encourages to "Create a conducive school environment for teaching ESD and GCED" (see Chapter 2, section 2.1). This also implies that school leaders should take responsibility for providing high-quality and relevant teaching and learning materials on global citizenship and education for sustainable development, as encouraged in action three on the UNESCO list. UNESCO encourages a whole-school approach that focuses on teaching ESD and GCED (see Chapter 2, section 2.1). UNESCO's encouragements align with what T1 claims she needs to feel better prepared to teach about climate change and sustainable development.

T2 reported in the interview that she felt prepared to teach about climate change. This was not due to the coverage of the topic during her teacher education, as she claims there was very little of that. However, T2 reports finding it important to discuss climate change. Additionally, as a social studies teacher, she thought that the two subjects complement each other well. In social studies, she explained that they deal with global challenges that can also be discussed in an English lesson. However, she emphasizes that the approach may vary depending on the individual. T2 also explained during the interview her personal interest and belief of the importance of teaching about climate change and sustainability. T2 explains an approach to addressing ESD, which involves incorporating the subject matter into various subjects. By that, she claims she can delve deeper into the subject, giving the pupils a more comprehensive understanding of the topic. This aligns with what UNESCO writes in their report addressed in the *Previous research and theory chapter* (see Chapter 2, section 2.1). The report Teachers Have Their Say by UNESCO calls for action to include Global Citizenship Education and Education for Sustainable Development as core components of quality education. UNESCO recommends that GCED and ESD should be interdisciplinary topics and should be included

across the curricula of multiple subject areas at all levels. Additionally, whole-school approaches and engaging with the broader community should be encouraged and facilitated (UNESCOc, 2021, p. 55). The implication for teachers in Norway may be that there will gradually be an increasing focus on EDS as the world generally seems to take it more seriously. The fact that Switzerland was found guilty of human rights violations in the Klima Seniorinnen case against Switzerland demonstrates our society's increasing focus and seriousness (Norges Insitusjon for menneskerettigheter, 2024, see Chapter 2, section 2.1).

T3 reported that she does not feel prepared to teach about climate change. She feels she does not know enough about it and would need to research and prepare more. This aligns with what Dillon et al. (2016) discuss concerning one of the main characteristics of wicked problems being that they lack clear-cut solutions because of incomplete or contradictory knowledge pp. 450-454). If she were to teach the topic in an English classroom to second-grade pupils, T3 claims she would need to present the topic in a simple and understandable manner. Moreover, she claims she would have to rely on her personal experience rather than what she learned in teacher training to approach the topic. T3 has a total of 30 English credits and two years of experience teaching. She did not recall receiving any climate change-related training and does not report a strong personal interest in the topic (see Chapter 3, section 3.1). This implies that T3 falls under the category of lack of strong personal interests, experience, and relevant training received in education. As a result, she does not feel prepared to teach sustainable development related topics. This demonstrates the connection between personal interest and whether individuals feel prepared to teach topics related to climate change, which is consistent with the literature by Chawla (2007), as discussed in the theoretical framework and previous research. This combination places teachers in a vulnerable position if not supported by a whole-school approach, interdisciplinary approaches and sufficient training in teacher training programs. In other words, without the necessary support, teachers may struggle to teach sustainable development-related topics, which can impact the quality of education they provide to their students. Chawla's research suggests that children who have positive experiences with nature at an early age are more likely to develop an interest in caring for the environment themselves. This emphasizes the importance of introducing sustainability and climate change education from the earliest stages of primary school. For teachers in Norway, this may mean they must be sufficiently prepared to teach these topics. However, they depend on collaborating with the school and the Ministry of Education to ensure success.

Essential in this situation is for the school to have a common general approach to sustainability. As T3 explained, the school she works at has an environmental group that includes representatives from each grade level. These efforts aim to help young children develop good environmental habits. As highlighted by UNESCOc (2021), a whole-school approach to ESD is recommended (p. 55, see Chapter 2, section 2.1). This approach aims to integrate sustainable development principles into all aspects of school life, including the curriculum, management, and community engagement. By doing so, schools can empower students to become responsible and active global citizens who are not completely dependent on their teacher's background. As UNESCO (2020) writes, in order to encourage learners to become change agents with the knowledge, means, willingness, and courage to take transformative action for sustainable development, learning institutions themselves need to transform. The entire learning institution should be aligned with sustainable development principles so that learning content and teaching methods are supported by how facilities are managed, and decisions are made within the institution. This comprehensive approach to ESD requires learning environments where students learn from real-life experiences and apply what they learn (p. 28). In T3s case, the school leaders had decided to adopt a whole-school approach, taking responsibility to provide students with an opportunity to work hands-on with sustainability and learn together, implementing essential 21st-century skills as outlined in Chapter 2, Section 2.2.

IT1 explains that he did not feel prepared to teach climate change based on his teacher training but has since received training in developing skills and conceptual and inquiry-based teaching. IT1 believes that his prior work experience, collaborations, and educational courses have driven him toward exploring and incorporating the SDGs into his teaching curriculum. He concludes that in international schools and within the IB curriculum, teachers are given the freedom to prioritize what is necessary for their students and what is relevant at the time. IT1 has explained that developing skills, conceptual understanding, and adopting inquiry-based teaching approaches have been crucial for him to feel confident in teaching sustainability.

These practices align with the theoretical framework and prior research presented in this thesis, which emphasizes the critical role of 21st-century skills in facilitating effective teaching of ESD. Dillon et al. (2016) state that climate-related problems are marked by conflicting perspectives and values, which makes it challenging to reach an agreement on the best course of action (see Chapter 2, section 2). And that is why they believe addressing

complex issues like those related to climate change and sustainability requires a collaborative effort from diverse stakeholders who can offer different perspectives and expertise (pp.450-454). This means that the interdisciplinary approach of IT1 corresponds with Dillion et al.'s (2016) collaborative method, encompassing diverse viewpoints to tackle complex issues such as climate change and sustainability (pp.450-454). This suggests that teachers in Norway should consider integrating topics related to ESD across multiple subjects, incorporating various perspectives, and involving the entire school community. Emphasizing 21st-century skills like collaborative problem-solving, critical thinking, and co-creation is essential when addressing this topic. By adopting this approach, teachers, even those who do not feel prepared to teach topics related to ESD or topics related to climate change and sustainability in English classrooms, may feel more empowered to effectively teach these topics to their pupils.

In my research question, I am exploring how teachers' beliefs and values impact their approach to complex issues like sustainability and climate change. As Borg (2003) writes it is necessary to consider how these issues are influenced not only by teachers' academic backgrounds but also by their personal perspectives and understanding (p.91). Chawla (2007) discusses in her article how having childhood role models who appreciate the natural world often influenced children to care for the environment in adulthood. Her research suggests that the earlier children have positive experiences with nature, the more likely they are to develop an interest in environmental conservation. This emphasizes the importance of introducing sustainability and climate change education from the earliest stages of primary school. The way teachers interpret and address these issues can significantly affect their teaching in the classroom. Therefore, it is crucial to understand how teachers' beliefs and values can shape students' understanding of essential topics like sustainability and climate change. Ultimately, their values and beliefs can influence how they teach and whether or not they contribute to creating a more sustainable future.

6 Conclusion

I have conducted in-depth interviews with four primary school teachers. The research aimed to gain a deeper understanding of the challenges teachers face in promoting climate change and sustainability and identify potential solutions to address these challenges. I discussed the views and attitudes of primary teachers regarding their reported ability to establish climate-ready classrooms and the training they received concerning climate change and sustainability.

Two out of four teachers interviewed said they do not feel adequately equipped to teach about climate change and sustainability in the English primary classroom. This lack of preparedness demonstrates an obstacle to developing English classrooms prepared to address the challenges posed by climate change and promote sustainable practices.

The teachers interviewed can be divided into two groups based on their experience levels. While the more experienced teachers felt confident and equipped to teach about climate change and sustainability, the less experienced ones expressed feeling unprepared and uncertain about teaching these subjects in the classroom. Table 1 presents an overview of participants displaying the teachers' experience (see Chapter 3, section 1). As their credits in English are almost identical, their experience differentiates them. T1 and T3 have two years of experience compared to T2 and IT1, who both have over ten years of experience. All teachers claim they feel prepared to teach climate change to a small or large extent because of what they have learned on their own outside of their teacher training. T2 and IT1 both reported having a personal interest in ESD, while T1 and T3 reported not having that to the same extent.

It seems quite natural that teachers report finding the topics of sustainability and climate change as too complex to approach in the primary classroom. Firstly, two out of four interviewees expressed feelings of being overwhelmed when tasked with defining sustainable development. This illustrates the potential challenges in teaching sustainable development and why some educators may feel unequipped to address this complex topic. Secondly, T2, T3, and IT1 all stated that they could not recall receiving any environmental training during their teacher education. T1 attended a voluntary seminar as part of her general training program during her teacher education. The seminar was not specifically related to the English course and was offered once during the five-year duration of her program. All teachers believed that

English teacher training programs needed to incorporate more sustainability training to prepare teachers better. Thirdly, the teachers stressed the significance of integrating sustainable development into the English curriculum as an interdisciplinary subject. They voiced a desire for a more comprehensive understanding of this field and highlighted the potential educational benefits of incorporating diverse perspectives from various subjects and involving teachers with varied backgrounds. Fourthly, there was a clear division in teachers' attitudes and beliefs regarding their preparedness to lecture about sustainability. Some teachers had a personal interest and passion for the subject and thus felt well-prepared to teach it. On the other hand, there were those who lacked the same level of interest in the topic and, as a result, felt less confident in their ability to deliver high-quality lessons.

In chapter 2, section 2.1, UNESCO, The Ministry of Education and Research, Dillion et al (2016), The United Nations, and others have described climate issues as complex and wicked problems. One of the main characteristics of wicked problems is that they lack clear-cut solutions due to incomplete or contradictory knowledge. The wicked problems are also difficult to solve, mainly due to their interdependent nature, which makes them resistant to traditional problem-solving methods (Barnett, 2012, as cited in Dillon et al. 2016, pp. 450-454). The responses from the teachers during my study all appeared to center around this specific issue with climate-related subjects. However, the teachers also offered some solutions. The four teachers emphasized the need for integrating sustainable development and climate change across various subjects, with a focus on fostering 21st-century skills such as collaborative problem-solving, critical thinking, and co-creation. They also highlighted the significance of active involvement and responsibility from school leaders. Furthermore, all participants underscored the necessity for enhancing teacher training programs, pointing out the lack of inclusion of sustainability and climate-related topics in the current English curriculum.

When asked how they would link sustainable development or climate change to a topic in the English subject the teachers suggested that literature could be helpful. As addressed by Brennan & Lo (2021) environmental ethics and deep ecology suggest a shift in our perspective on the relationship between humans, animals, and nature. These approaches prompt us to reevaluate our conventional human-centered views and acknowledge the inherent worth of non-human life forms. Incorporating environmental ethics and deep ecology into the teaching of environmental issues through literature in the English classroom can lead

to a more profound understanding and appreciation of the natural world among students. It can also foster empathy toward animals and a greater willingness to protect nature. T1 expressed how she believes it is an excellent way for them to relate to the themes by reading about them through children of their own age and through storytelling (see Chapter 4, section 4.1.4). This means that English literature in the primary classroom could provide various opportunities to address sustainable development and climate change, making it a valuable resource for supporting teaching efforts in these important areas.

The less experienced teachers expressed feeling unprepared to teach topics related to climate change and sustainability. To address this, it is suggested that these issues should be approached in a cross-curricular manner. The subject of English, in particular, could play a significant role in developing climate-ready classrooms. By collaborating with the other subjects, English could offer various opportunities to address climate change and sustainability in a cross-curricular approach, ultimately working towards the development of climate-ready classrooms. Dillon et al. (2016) states that climate-related problems are characterized by conflicting perspectives or values, making it challenging to reach an agreement on the best way forward. Therefore, addressing wicked problems requires a collaborative effort from various stakeholders who bring diverse perspectives and expertise to the table (p. 450-454). The implication for teachers in Norway may be that they should use the same approach to teaching these issues, including a collaborative effort with colleagues, the pupils, the school in general and the local community. By using this approach teachers could effectively address these issues by expanding their approach to encompass a cross-curricular perspective. Teachers in Norway may benefit from using a collaborative approach to teaching various issues. This would involve working closely with colleagues, students, the school, and the local community. By taking this approach, teachers can effectively address these issues by incorporating a cross-curricular perspective. They could utilize a variety of subjects and teaching methods to create a more comprehensive and engaging learning experience for the pupils, helping them to develop and learn through 21st-century skills such as creativity, critical thinking, communication, collaboration, and information literacy.

6.1 Limitations and further research

This study's findings cannot be generalized to all primary school teachers in Norway as it solely focuses on four teachers in the research. Therefore, it is necessary to exercise caution when drawing conclusions from this study and keep in mind its limited scope. All participants had the opportunity to prepare their answers in advance as the interview guide was sent out in advance. T1 even stated that she had prepared herself and read up on the subject, indicating she could have had even less knowledge than displayed in her answers in the interview.

In my thesis, I have researched teacher cognition regarding their sense of preparedness. To further enhance the research, it would be valuable to consider the perspectives of students, aspiring teachers, and school administrators. It could also be beneficial to supplement the in-depth interviews with a survey addressing a more significant number of teachers, school owners, school leaders, and teacher students. This would provide a broader perspective to the research and help gain a more general overview of Norwegian English teachers. It could also be interesting to include teachers from different parts of Norway and see if there are any differences based on geography and the surrounding environment. It would be intriguing to explore whether some regions of Norway are more connected to their surrounding nature and, therefore, find sustainable development and climate-related issues more important or feel more prepared to teach it based on personal interest or a greater focus on the region or municipality in general.

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8 Appendices

8.1 Appendix 1 – Information letter

Vil du delta i forskningsprosjektet

Engelsklæreres oppfatning av bærekraftig utvikling i klasserommet?

Dette er en forespørsel om å delta i et intervju hvor formålet er å undersøke om engelsklærere føler seg tilstrekkelig forberedt i å undervise om bærekraft og klima. Her vil du få informasjon om formålet med prosjektet og hva deltakelse vil innebære for deg.

Formål
Formålet med prosjektet er å undersøke i hvilken grad engelsklærere i barneskolen føler seg tilstrekkelig forberedt til å inkludere det tverrfaglige temaet «bærekraftig utvikling» og et av opplæringens verdigrunnlag, «respekt for naturen og nærmiljøet», i engelskundervisningen. Forskingen vil inngå i min master som er en del av studiet Grunnskolelærerutdanning 1-7, hvor mitt masterfag er engelsk.

Hvem er ansvarlig for forskningsprosjektet?
Høgskolen i Innlandet er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?
Du får denne henvendelsen om å delta fordi du underviser i engelsk på barneskolen.

Hva innebærer det for deg å delta?
Metoden som skal benyttes i denne forskningen er intervju. Jeg ønsker å spille inn lydopptak for å kunne benytte dine svar så nøyaktig som mulig i forskningen. Lydopptaket blir umiddelbart kryptert på telefonen og videre sendt til et Nettskjema med innlogging som kun jeg som student har tilgang til. Denne portalen er godkjent av SIKT. Intervjuet vil ta deg ca. 30 minutter. Spørsmålene i intervjuet vil være tilgjengelig for deg på e-post slik at du kan reflektere på forhånd dersom du vil, men forberedelse er ikke et krav for å delta.

Det er frivillig å delta
Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst før ferdigstilling av prosjekt trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger
Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket:

- Det vil kun være min veileder og jeg som har tilgang til opplysningene du gir.
- Navnet og kontaktopplysningene dine vil jeg erstatte med en kode som lagres på egen navneliste adskilt fra øvrige data.
- Opplysningene du gir som deltager vil ikke kunne gjenkjennes i publikasjonen.

Hva skjer med personopplysningene dine når forskningsprosjektet avsluttes?

Prosjektet vil etter planen avsluttes innen 30.06.24. Etter prosjektslutt vil datamaterialet med dine personopplysninger anonymiseres. Etter prosjektslutt vil lydopptak og koblingsnøkkel slettes.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke. På oppdrag fra Høgskolen i Innlandet har Sikt – Kunnskapssektorens tjenesteleverandør vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke opplysninger vi behandler om deg, og å få utlevert en kopi av opplysningene
- å få rettet opplysninger om deg som er feil eller misvisende
- å få slettet personopplysninger om deg
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger

Hvis du har spørsmål til studien, eller ønsker å vite mer om eller benytte deg av dine rettigheter, ta kontakt med:

- Høgskolen i Innlandet ved førsteamanuensis Marit Elise Lyngstad [redacted]
- Masterstudent Marte Jostad [redacted]
- Høgskolen i Innlandets personvernombud: Usman Aghar (personvern@inn.no)

Hvis du har spørsmål knyttet til vurderingen som er gjort av personverntjenestene fra Sikt, kan du ta kontakt via:

- Epost: personverntjenester@sikt.no eller telefon: 73 98 40 40.

Med vennlig hilsen

Marit Elise Lyngstad
Marte Jostad

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet og har fått anledning til å stille spørsmål. Jeg samtykker til:

☐ å delta i intervju

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet

---

(Signert av prosjektdeltaker, dato)

8.2 Appendix 2 – Approved NSD application

Sikt

Norsk ▾ Marte Jostad ▾

Meldeskjema / Engelsklæreres oppfatning av bærekraftig utvikling / Vurdering

Vurdering av behandling av personopplysninger

Skriv ut 02.10.2023 ▾

Referansenummer
718846

Vurderingstype
Standard

Dato
02.10.2023

Tittel
Engelsklæreres oppfatning av bærekraftig utvikling

Behandlingsansvarlig institusjon
Høgskolen i Innlandet / Fakultet for lærerutdanning og pedagogikk / Institutt for humanistiske fag

Prosjektansvarlig
Marit Elise Lyngstad

Student
Marte Jostad

Prosjektperiode
01.09.2023 - 30.06.2024

Kategorier personopplysninger
Alminnelige

Lovlig grunnlag
Samtykke (Personvernforordningen art. 6 nr. 1 bokstav a)

Behandlingen av personopplysningene er lovlig så fremt den gjennomføres som oppgitt i meldeskjemaet. Det lovlige grunnlaget gjelder til 30.06.2024.

Meldeskjema

Kommentar
OM VURDERINGEN
Sikt har en avtale med institusjonen du forsker eller studerer ved. Denne avtalen innebærer at vi skal gi deg råd slik at behandlingen av personopplysninger i prosjektet ditt er lovlig etter personvernregelverket.

UTDYPENDE OM LOVLIG GRUNNLAG
Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

FØLG DIN INSTITUSJONS RETNINGSLINJER
Vi har vurdert at du har lovlig grunnlag til å behandle personopplysningene, men husk at det er institusjonen du er ansatt/student ved som avgjør hvilke databehandlere du kan bruke og hvordan du må lagre og sikre data i ditt prosjekt. Husk å bruke leverandører som din institusjon har avtale med (f.eks. ved skylagring, nettspørreskjema, videosamtale el.)

Personverntjenester legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).

MELD VESENTLIGE ENDRINGER
Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til oss ved å oppdatere meldeskjemaet. Se våre nettsider om hvilke endringer du må melde: https://sikt.no/melde-endringar-i-meldeskjema

OPPFØLGING AV PROSJEKTET
Vi vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

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8.3 Appendix 3 – Interview guide Norwegian and English

Personlig:

Hvor mange års erfaring har du med undervisning i engelsk?

Hvor mange års utdanning har du?

Hvor mange års utdanning i engelsk har du?

Hva slags utdanning har du?

Hvilket trinn underviser du?

Hvilke fag underviser du i?

Hvor lenge har du jobbet på denne skolen?

Bærekraftig utvikling:

Hvordan definerer du bærekraftighet?

Lærte du å undervise om klimaendringer i utdanningen din?

Kan du beskrive en vellykket undervisningstime du hadde om klimaendringer? (Det trenger ikke å være i engelskfaget.)

Bærekraftig utvikling i Engelsk faget:

Bærekraftig utvikling er ikke et tverrfaglig emne i engelskfaget. Hva tenker du om det?

Bør vi inkludere det uansett?
Respekt for naturen og miljøbevissthet er en av kjerneverdiene i utdanningen og opplæringen.

Hvis du knitter bærekraftig utvikling eller klima endring til Engelsk faget, hvilken del av det ville det være naturlig å knytte det til?

Faktatekster eller litteratur.
(Potensial for litteratur: Kreativitet, personlig forbindelse, handlekraft, empowerment, empati, fantasi, inspirasjon, håp og kritiske leseferdigheter.)

Føler du deg forberedt til å undervise om bærekraftighet og klimaproblemer? Hvorfor/hvorfor ikke?

Hvis ja, føler du deg klar basert på utdanningen din eller personlig interesse?
Hvis nei, hva trenger du for å føle deg bedre forberedt?

Personal

How many years of experience do you have in teaching English?

How many years of education do you have?

How many years of English education do you have?

What kind of education do you have?

What grade do you teach?

Which subjects do you teach?

How long have you worked at this school?

Sustainability

How do you define sustainability?

Did you learn to teach about climate change in your education?

Can you describe a successful teaching session you had on climate change? (It does not have to be in the English subject.)

Sustainability in the English subject

Sustainable development is not an interdisciplinary topic in the English subject. What are your thoughts about that?

-Should we include it regardless?
-It is one of the core values of the education and training.

If you connected sustainability and climate to the English subject, what part would it be? (E.g., literature, culture, etc.)

-Factual texts or literature

(Potential of literature: Creativity, personal connection, agency, empowerment, empathy, imagination, inspiration, hope, and critical reading skills)

Do you feel prepared to teach about sustainability and climate issues? Why/why not?

If yes, do you feel ready based on your education or personal interest?

If not, what do you need to feel more prepared?