SPLLÄR 2023-026

GÖTEBORGS UNIVERSITET

Using Climate Fiction in Education for Sustainable Development in the EFL Classroom

A Literature Review

Emelie Gille & Tove Segerdahl

Ämneslärarprogrammet med inriktning mot arbete i gymnasieskolan

Degree essay:	15 hp
Course:	LGEN2G
Level:	Undergraduate
Term/year:	HT/2023
Supervisor:	Zlatan Filipovic
Examiner:	Maria Olaussen

Keywords: Climate fiction, Education for Sustainable Development (ESD), Swedish upper secondary school, EFL teaching, environmental literature, didactical tools

Abstract

Due to climate change, the human race faces the challenge of how to change our behaviour towards nature in order to achieve a more sustainable future. In educational settings, this is reflected in the Swedish steering documents issued by the National Agency for Education requiring teachers to implement environmental education in their teaching. However, there are no explicit instructions on how to achieve this. For subjects within humanities, such as English as a Foreign Language (EFL), the possibility of using literature to address environmental issues, has lately become a topic of discussion. More specifically, climate fiction is proposed to complement scientific perspectives and contribute with alternative narratives of possible future scenarios. The aim of this paper is therefore to review the research field on this topic and in alignment with existing educational frameworks, investigate whether literature, in the form of climate fiction, can help students reflect upon their relationship to the natural world and become environmentally conscious members of society acting for a sustainable future. The result of the study suggests that climate fiction used under the right circumstances could fulfil this purpose, although there is still a need for future empirical research before drawing any firm conclusions.

Table of Contents

1 INTRODUCTION **1**

1.1 Aim and Research Questions 2

1.2 Method 3

2 HISTORICAL BACKGROUND AND TERMINOLOGY **6**

3 FINDINGS **8**

3.1 Attitudes Towards Climate Fiction 9

3.2 Climate Fiction in Relation to Educational Frameworks and its Applicability in the Classroom 10

3.3 Practical Methods on How to Incorporate Climate Fiction in ESD 12

4 DISCUSSION AND PEDAGOGICAL IMPLICATIONS **16**

5 CONCLUSION **19**

REFERENCES **20**

1 Introduction

In *Big World, Small Planet: Abundance Within Planetary Boundaries,* Rockström and Klum (2015) demand us to open our eyes: "The numbers are overwhelming. Our planet is being pressured harder than ever...We have reached a point where our future is in danger" (p. 15). Climate change is currently damaging animals, plants, entire ecosystems, and societies all over the globe. It is an issue that cannot be ignored, and the need for a green transition has become a prominent feature on most political agendas. Within the educational context, this is internationally reflected in the emergence of the term "Education for Sustainable Development" (ESD), which is also included in the Swedish curriculum. As prospective teachers, we must therefore consider our responsibility as educators of climate change and be prepared to incorporate environmental issues into our classrooms.

More specifically, when looking at the curriculum for Swedish upper secondary school, it is stated that all education should allow for the students to develop a personal relationship with environmental issues and present ways of how they can adopt a more sustainable lifestyle, both on an individual and societal level (Läroplan för gymnasieskolan [Lgr11], 2011). As Uhrqvist et al. (2021) illustrate, sustainable development does not only concern environmental issues but also includes economic and social development (p. 150). In this paper, however, we have chosen to look at how teachers can address the environmental aspect of sustainable development by using climate fiction, thus excluding the social and economic perspectives. This choice was made in order to narrow down the selection of articles, thus allowing us to study the chosen environmental aspect of education for sustainable development in more detail.

Studies have shown that many teachers feel unsure of how to address environmental education and actively engage their students in the issue (Aijmer Rydsjö & Andersson Hval, 2021, p. 39). Uhrqvist et al. (2021) further explain how ESD easily can "tip into indoctrination of given values, where children use different kinds of assessment tools to see how far they are from being the good green citizen" (p. 156). In addition, ESD has also been criticised for dealing with too simplistic and narrow a perspective, mainly focusing on consumerism, individual responsibility, and technical solutions (Uhrqvist et al., 2021, p. 156). The importance of effective pedagogy and well-thought teaching methods are therefore crucial if we are to foster environmentally aware citizens and equip them with the knowledge

that prepares them to meet the challenges of the green transition with respectful behaviour towards nature (Scharenberg, 2021, p. 2; Indellicato, 2021, pp. 161, 166).

Shifting focus toward the literary genre, increased environmental awareness during the second half of the twentieth century laid the foundation for the emergence of climate fiction (Clode & Stasiak, 2014, p. 24). Climate fiction can be defined as literary works depicting the relationship between humans and the natural world. Often, the genre addresses the unpredictability of environmental change and the human responses to that change. Especially during the 1990s, climate fiction expanded from being mainly works of science fiction, to other types of texts, the most prominent newcomer being climate fiction novels for young adults. These texts, whether they be poems or novels depicting possible future environmental scenarios, made it possible for the reader to become informed of, and engaged about climate change (Clode & Stasiak, 2014, p. 26).

During our university studies as prospective teachers of English in upper secondary school, we encountered such works of climate fiction. It was our impression that the literary works helped us as readers become more knowledgeable, invested, and encouraged to take action for the environment. The texts left us feeling more connected to the fates of the characters and environmental settings depicted in the novels. Therefore, we felt that using climate fiction in the classroom could be a way of completing our mission as teachers to help students develop personal connection to the environment, as well as making them more environmentally conscious, and encouraging them to act for a sustainable future (Lgr11, 2011).

1.1 Aim and Research Questions

The purpose of this paper is to review how climate fiction can help address issues of climate change in the English classroom, especially focusing on English as a Foreign Language (EFL). Considering how climate fiction is a relatively new genre of literature, we discovered a gap in the research field concerning the relationship between climate fiction and educational contexts. Our intent with this essay is, therefore, to review the existing literature in the field about how fiction can help address climate change and examine if it is applicable to a Swedish context in upper secondary school. Through comparing different studies, we also aim to see whether climate fiction could function as a didactical tool for creating more engaging

education for sustainable development. To accomplish this, we will investigate the following research questions:

1. What are the potential possibilities and limitations of using climate fiction in EFL teaching to promote environmental awareness and engagement among students?
2. How does the use of climate fiction align with existing educational frameworks for Swedish upper secondary school?

More specifically, we will refer to the Swedish curriculum which outlines general values, goals, rights, and obligations for upper secondary school. In addition, we will also examine the syllabus for English 5, 6, and 7 which accounts for the specific requirements that teachers within the subject need to cover in their education.

Presently, there is no direct research about how teachers of English in Swedish upper secondary school can combine and incorporate the environmental values of the curriculum into their teaching methods and materials. This paper will therefore hopefully contribute to this field and include possible pedagogical implications with a focus on English teaching, mainly in Swedish upper secondary school. Lastly, we will also give suggestions for further research within the field.

1.2 Method

Below, we will account for the process leading up to our results. To begin with, the searches were conducted through the databases of Gothenburg University Library, Education Collection, and Semantic Scholar. Moreover, we also ran searches in Literature Online but excluded the database as it was more focused on traditional literature rather than climate fiction. To find articles related to our aim, we divided our topic into five search categories consisting of different synonyms and terms referring to that category. The division therefore had the following structure:

1.	“Youth literature”, “climate fiction”, “eco-literature”, “fiction”, “ecocriticism”
2.	“Motivation”, “engagement”, “emotions”, “action readiness”
3.	“ESL/EFL (English as a Second/Foreign Language)”, “SLT (second language teaching)”, “SLL (second language learning)”

4.	“Sustainable education”, “sustainable development”, “environmental education”, “environmental issues”, “Education for Sustainable Education (ESD)”
5.	“Upper secondary school”, “high school”

When it became evident that there was no existing research related to the teaching of English as a Second/Foreign Language (ESL/EFL), we excluded the search terms in category three. There were also scarce results related to category two. Consequently, our most used and successful searches were related to categories one, four, and five. In addition to the above-mentioned databases and search terms, we also looked at the reference lists in selected articles and thereby, using the so-called snowball technique, which means studying the list of references of one text in order to find other relevant texts, we managed to expand our list of relevant sources.

As the research field on our topic has been somewhat limited, we have included various forms of publication, both empirical studies and literary analyses. Furthermore, due to the lack of research, the chosen sources do not exclusively cover climate fiction in relation to education in school settings. Instead, we have also included articles which more generally discuss literature as a way of addressing climate change. In addition, most of the studies were performed on a small scale, and, therefore, they might not show a representative picture, indicating that further research with more quantitative data is needed.

One criterion for inclusion when choosing the pedagogy-related studies, was to focus on upper secondary school students, adults, or prospective teachers as participants, thus excluding all works directed towards lower- or middle school. Moreover, we have actively searched for and included a few Swedish studies since one of our research questions is directly aligned with the Swedish curriculum for upper secondary school. Regarding publication dates, we did not actively have to exclude any works as most of the relevant research fields do not date longer than ten years back.

The method of analysis can be described in four steps, with the search phase being the first step. Here, we solely looked at titles and abstracts and decided upon 32 articles. Step two involved skim-reading the articles and removing irrelevant ones. In step three, we had 17 sources left which we read thoroughly. The fourth and last step consisted of a last selection of the most suitable sources, finally resulting in the 13 articles which are the basis for this review and presented in the table below.

Author(s):	**Title:**	**Type of Publication:**	**Year of Publication:**
Andersson Hval, U., & Aijmer Rydsjö, C.	"Klimatkrisen i klassrummet: Reflektioner kring användning av litteratur i undervisning om hållbar utveckling" [The Climate Crisis in the Classroom: Reflections about the use of Literature in Education for Sustainable Development]	Article in scientific journal	2021
Bartosch, R.	"Scale, Climate Change, and the Pedagogic Potential of Literature: Scaling (in) the Work of Barbara Kingsolver and T.C. Boyle"	Article in scientific journal	2018
Bruhn, J.	"Mind the Gap - Naturvetenskaplig kunskap och litteraturundervisning" [Mind the Gap: Scientific Knowledge and Literary Education]	Book chapter in anthology	2020
Ghosh, A.	"Amitav Ghosh: Where is the Fiction About Climate Change?"	Article in online newspaper	2016
Guanio-Uluru, L.	"Education for Sustainability: Developing Ecocritical Literature Circles in the Student Teacher Classroom"	Article in scientific journal	2019
Lucksinger, A.	"Ecopedagogy: Cultivating Environmental Consciousness through Sense of Place in Literature"	Article in scientific journal	2014
Löwe, C., & Nilsson Skåve, Å.	"Didaktiska perspektiv på hållbarhetsteman: I barn- och ungdomslitteratur" [Didactical Perspectives on Sustainable Development-themes: In Children's and Young Adult Literature]	Anthology	2020

Myren-Svelstad, P.	"Sustainable Literary Competence: Connecting Literature Education to Education for Sustainability"	Article in scientific journal	2020
Nikoleris, A., Stripple, J., & Tenngart, P.	"Narrating Climate Futures: Shared Socioeconomic Pathways and Literary Fiction"	Article in scientific journal	2017
Pandya, M. J.	"'Climate Fiction Narratives': A Study of Maja Lunde's Novels – The History of Bees and The End of the Ocean"	Official conference proceedings	2021
Rockström, J., & Klum, M.	*Big World Small Planet: Välfärd inom planetens gränser* [Big World, Small Planet: Abundance Within Planetary Boundaries]	Book	2015
Salomonsson, A.	"Vatten som liv och död - Ekokritiska och didaktiska perspektiv i Mats Söderlunds ungdomsroman Hotet" [Water as Life and Death - Ecocritical and Didactical Perspectives of Mats Söderlund's Young Adult Novel Hotet].	Book chapter in anthology	2020
Schneider-Mayerson, M.	"The Influence of Climate Fiction"	Article in scientific publication	2018

2 Historical Background and Terminology

Before discussing the use of literature in the classroom, we will have a brief look at the emergence of Education for Sustainable Education (ESD) in teaching as well as define a few key terms. During the second half of the 19th century, the world became aware of the possible consequences of exploiting the resources of our planet. It became apparent that human actions had impacted the earth and its ecosystems. The term Anthropocene hence gained relevance and refers to "the human time age" (Löwe & Nilsson Skåve, 2020, p. 13). It therefore marks the beginning of human impact on the earth's geology and ecosystems and that, as humans, we are responsible for the changing climate on our planet. Therefore, when looking towards the future, it also means that we have the responsibility to act and solve the crisis.

The question of how to preserve, and not further damage the planet, has throughout the years thus become one of the most relevant topics, putting “sustainable development” on the agenda in both political and in different social settings. Within the educational sphere, the term ESD has therefore gained weight and has a prominent role in UNESCO’s work for sustainable development. According to UNESCO, ESD means incorporating issues such as climate change, disaster risk reduction, and biodiversity into education. Participatory and engaging learning is also considered important to include in education, because when education motivates the students to think critically, to care and to act, an education for sustainable development can be achieved (University of Plymouth, n.d.). The Council of the European Union further suggests that "ESD is essential for the achievement of a sustainable society and is therefore desirable at all levels of formal education and training, as well as in non-formal and informal learning" (University of Plymouth, n.d.). It is thus clear that Education for Sustainable Development is a very current topic that must be included in education.

Looking at the Swedish steering documents for upper secondary school, ESD has had a prominent presence in the curriculum since the 1990s. As this essay will mainly, but not solely, focus on the teaching of English in upper secondary school, studying the syllabus for English and its content regarding ESD, is relevant. There is not such a specific mention of ESD in the syllabus for English, as there is in the curriculum. However, it is stated that students should become aware of living conditions and social issues (Engelska, 2021), two categories into which the global climate crisis and its impact on our world surely qualify. With global warming resulting in extreme weather conditions, rising sea levels, and increasing temperatures, it is clear that the climate crisis is affecting our daily lives and that it has become a subject raising both social and ethical discussions.

Another aspect that is mentioned in the syllabus for English in upper secondary school is that students should be able to discuss and critically reflect on current events and social and ethical issues (Engelska, 2021). Moreover, the importance of exposing students to different genres of texts and media to help spur conversation about social and ethical issues is also clearly stated. As suggested in *Didactical Perspectives on Sustainable Development-themes: In Children’s and Young Adult Literature* [our translation], reading and discussing literature can be a way of raising discussion and engaging students in issues brought up in the text (Löwe & Nilsson Skåve, 2020). Critical literary analysis presents the opportunity to experience other living situations than one’s own, providing a sense of place or “situatedness”

which can help students relate to and become conscious of the living and social conditions addressed in the texts (Lucksinger, 2014, p. 368). This process of relating to the experiences of others through critical reading can be used as a method for learning about the environment when looking at texts from an ecocritical perspective. Ecocriticism is a method of analysis that has emerged alongside the world's awakening to climate change. Löwe and Nilsson Skåve (2020) define ecocriticism as a field of research where literary texts are used as a departure point to create critical analysis and discussion about ecological issues (p. 11).

One such genre of literary texts that has been emerging and growing during the last decade, is climate fiction (Schneider-Mayserson, 2018, p. 473). Beginning in the 1960s the environmental issue moved from the strictly scientific sphere into the cultural, social, and political discourse (Clode & Stasiak, 2014, pp. 23-25). Since then, the literary genre of climate fiction started to appear as a way of addressing the ever-present environmental issue, with Ballard's *The Drowned World* (1962) as one leading example. It was then during the 1990s that the genre expanded even more, reflecting the current debates and political engagement about climate change (Clode & Stasiak, 2014, pp. 23-25). Much of the literature available depicts dystopian, apocalyptic scenes where human beings are made responsible for the situation and as Pandya (2021) notes, the main challenge for authors of climate fiction is now to illustrate how the "predilection for nature and future is constructed" (p. 72).

This call for a new promising relationship with nature is further discussed by Rockström and Klum in *Big World, Small Planet: Abundance Within Planetary Boundaries* (2015). More explicitly, they state that we need a new, positive narrative about the environment and that we must reconsider how we can achieve global welfare in harmony with nature. One possible way of achieving such a narrative in education is to involve literature about the environment as a way of engaging the students. Since the syllabi for English 5, 6, and 7 in upper secondary school also include literary studies (Engelska, 2021), the use of climate fiction aligns with the course contents and could function to bridge the gap between the English language education and the urgent need for effective environmental education.

3 Findings

Below, we will present the results of the literature we found relevant for the aim of this paper. One shared conclusion is that we must educate ourselves and establish a closer relationship with nature if we are to achieve a changed and more sustainable behaviour on a global scale,

as well as in the classroom. The literature we included is a mix of articles, books, conference proceedings, and studies that discuss both limitations and possibilities of using climate fiction to promote environmental consciousness. The findings below are divided into three parts. In the first part, we will account for general opinions and attitudes on the relationship between literature and environmental consciousness. In the second part, we will apply a more local perspective and analyse how climate fiction could be incorporated alongside the existing educational frameworks. Lastly, we will present practical methods on how teachers could integrate climate fiction into the classroom for the purpose of addressing education for sustainable development.

3.1 Attitudes Towards Climate Fiction

As mentioned in the introduction of this paper, environmental scientist Johan Rockström and nature photographer Mattias Klum urge us to open our eyes to the fact that our future is in danger (p. 15). After spending many years researching global warming and trying to convey the messages of the climate emergency they, within their separate fields of work, discovered the same issue. That people are not taking action for a more sustainable future when they only read facts and hear numbers of the worsening state of the planet caused by global warming. To be informed of the consequences of the climate change, understanding the facts and the numbers, does not automatically generate a change in behaviour. With this realisation in mind, they joined forces and wrote *Big World, Small Planet: Abundance Within Planetary Boundaries* (Rockström & Klum, 2015), a combination of facts together with powerful photos capturing environments and animals that have been affected by global warming. The book also contains concrete proposals for the future and express the importance of instilling a positive attitude towards the environment, with the purpose of inciting a culture of taking action. Rockström and Klum (2015) thus argue that it is by connecting the rational and the emotional - science and arts - that we can change our attitudes and behaviours and become environmentally conscious, working towards a sustainable future (pp. 9-10).

However, there are those who claim that literary art forms portraying climate emergency could possibly result in less environmental consciousness if depicted unrealistically, a theory proposed by environmental activist and writer Amitav Ghosh. In the article “Amitav Ghosh: Where is the Fiction About Climate Change?” (2016), the author argues how climate-related issues are rarely depicted in fiction, and if featured, are portrayed as science fictional, dystopian and unrelatable narratives. This, despite the fact that the

possible consequences of global warming are in no way imaginary but instead very realistic issues in much need of solving. Ghosh continues to describe how the lack of engagement from readers and the overall absence of climate fiction cannot be a result of insignificance of the subject, nor of human ignorance, as the climate issue is constantly debated globally. Instead, he proposes that given how the climate fiction that does exist is often dystopian, extreme, and unrealistic, it has resulted in a decoupling of narratives from our realities, disregarding the emergency of global warming.

This issue of being able to relate to an environment to become aware and wanting to act is also discussed in "The Influence of Climate Fiction: An Empirical Survey of Readers" by Schneider-Mayerson (2018). In a qualitative survey with 161 Americans participating and reading 19 works of climate fiction, Schneider-Mayerson (2018) investigates the readership of climate fiction as well as the novels' impact on the readers. The study shows that the readers of climate fiction are generally younger with more liberal views, and they are also often more aware of climate change to start with. Even so, the author points out that readers who could relate to the climate issue portrayed in the books not only became even more environmentally conscious after reading, but they also cared more, and thus were more prone to take action (p. 488). Especially when the reader could relate to the use of the setting in the novel the readers became more invested. One such example was expressed by a participant who read *Ultimatum* (Glass, 2009), a novel illustrating how the city of Miami is washed into the sea because of the rising sea levels. The reader had spent his childhood in South Florida and therefore felt that the book opened his eyes to the reality of the climate crisis. This shows that climate fiction can affect and engage the minds of readers in a proactive way. Although, as mentioned above, climate fiction may also induce negative feelings of hopelessness in the readers' minds (Schneider-Mayerson, 2018, p. 487). Therefore, it is important to also establish a culture of taking action, a positive and proactive mindset when reading climate fiction, so that the reader is left not only more environmentally conscious but also with a positive attitude, wanting to act and protect the environment.

3.2 Climate Fiction in Relation to Educational Frameworks and its Applicability in the Classroom

Löwe and Nilsson Skåve, the editors of *Didactical Perspectives on Sustainable Development-themes: in Children's and Young Adult Literature* [our translation], introduce the book by

mentioning how narratives “carry a unique didactical potential” to elaborate environmental issues in a way that creates emotional engagement (2020, p. 7). By referring to the environmental aspect of the curriculum for Swedish upper secondary school, Lgr11, which was previously discussed in Chapters 1 and 2 of this paper, they argue that the contents of the anthology are relevant for all school subjects, thereby including the courses English 5, 6, and 7 (Löwe & Nilsson Skåve, 2020, p. 10). Thus, the authors show that novels can be a useful tool for teachers to help integrate, address, and promote sustainable values to their students. Partly because literature reflects contemporary ideas and values, and partly because a novel has the potential to move between periods of time which allows for depictions of both past, present, and future scenarios. Furthermore, they also refer to the prominent ecocritical writer Greg Garrard who expresses that fictional narratives can deliver a sense of awareness which makes the reader want to defend and act according to certain ecological values (p. 12). In short, Löwe and Nilsson Skåve (2020) claim that narratives and fiction dealing with environmental issues offer a good opportunity for students to develop a personal relationship with environmental questions which is one of the criteria expressed in the curriculum (pp. 8, 11).

Aijmer Rydsjö and Andersson Hval (2021) further show in their article that prospective teachers are positive towards including environmental literature in their future teaching about sustainability. Before their study, the authors had noticed that many students in the educational programme felt sceptical or insecure about using texts with controversial or potentially emotionally disturbing content (p. 29). However, the authors argue that education in upper secondary school cannot protect students from realities brought by climate change, and that it is not only the responsibility of natural and social sciences to deal with the issue. Instead, they suggest teachers of EFL carry good opportunities to use literary narratives in order to “bridge the gap between knowledge and personal experience” (Aijmer Rydsjö & Andersson Hval, 2021, p. 30). The article also demonstrates the lack of explicit directions regarding ESD in the syllabi for English 5, 6, and 7, but, however, argues that the English classroom could help widen the perspectives of more knowledge-based subjects like natural sciences. More precisely, the study examined twelve prospective teachers discussing the potential use of literature in the EFL classroom when addressing current issues, such as global warming and sustainable development (p. 28). The results showed that the participants by the end of the study were positive about using literature to teach their future students about environmental issues. For instance, they reported feeling more confident in how to address

environmental issues in teaching after having participated in the discussion, and they also appreciated how the syllabi for English allowed them to shed light on more complex correlations between the environment and social or global perspectives (pp. 37-38, 41). As already mentioned, the steering documents for Swedish upper secondary school requires teachers to incorporate ESD in their teaching (Lgr11, 2011). The method to do so with the help of literature proposed by Aijmer Rydsjö and Andersson Hval (2021), hence addresses the issues in question while adhering to the instructions of the steering documents.

Another author that problematizes the question of how to align the educational frameworks, ESD and literary studies, is Myren-Svelstad (2020) in the article "Sustainable Literary Competence: Connecting Literature Education to Education for Sustainability". With a background as an experienced upper secondary teacher in Norway, Myren-Svelstad proposes in this meta-theoretical study a conceptual re-design of how Environmental Studies (ES) should be implemented in teaching literature, although not covering practical teaching methods in detail. According to him, teachers must strive to move away from the usual eco-pedagogical question of *what can literature do for ES?* and instead, replace it with *what can ES do for literature?* With this question, he expresses how literary competencies learned while reading is connected to and can help students develop sustainable competencies as well. Thus, his concept aligns with the educational frameworks' requirement of incorporating interdisciplinary ESD in teaching, yet not down-prioritising the teaching of actual literature (Myren-Svelstad, 2021, p. 16).

3.3 Practical Methods on How to Incorporate Climate Fiction in ESD

As previously suggested by Myren-Svelstad (2021), the question of how to practically incorporate education for sustainable development in one's teaching, without risking the students' loss of learning essential literary competencies, is also discussed by Lucksinger (2014) in "Ecopedagogy: Cultivating Environmental Consciousness through Sense of Place in Literature". In the article, the author describes how she, being a teacher herself, aims to connect environmental studies with literary studies by focusing on the literary concept of "sense of place". Lucksinger (2014) defines this concept as the way someone experiences and relates to an environment. The "sense of place" concept is incorporated in multiple stages of her teaching, starting when she chooses what climate fictional texts the students are supposed to read, and then continuously incorporating it in literary discussions and study questions (p.

356). This relating of setting and environmental studies is perhaps most apparent in how she asks the students to choose a place of their own to study more closely. These specific environments could be a park, part of a forest, or any type of natural environment that the students are familiar with. The chosen environments are then involved in the rest of the education as students are asked to write field journals about them, discuss them in groups, visit them, and get engaged in the local community of their chosen locations. The result of the study showed that the students felt a connection to their chosen places and expressed a willingness to act if the areas were littered or mistreated in a non-eco-friendly manner. By centering her course structure around the literary concept of "sense of place", Lucksinger (2014) manages to get her students to relate to, get involved with, and care for environments via literature. Connecting literary studies and environmental studies and then relating them to the students' own experiences can thus help the students become environmentally conscious members of society (p. 368.)

A different approach on how to integrate climate literature in education is discussed by Bruhn (2020) in his chapter "Mind the Gap - Scientific Knowledge and Literary Education" in *Didactical Perspectives on Sustainable Development-themes: in Children's and Young Adult Literature* [our translation]. Here, the author gives suggestions on how to teach students the relationship between scientific texts such as reports or articles, and fictional texts, for instance, poems or novels. The purpose of the chapter is to give concrete methods on how teachers of Swedish literary studies in upper secondary school can use these types of media in order to discuss the effects and benefits of different genres. Since literary studies not only concern the Swedish courses but also all English courses in upper secondary school (Engelska, 2021), Bruhn's approach is also applicable to the purpose of this paper. In short, the author claims that it is the divergence of text types that lays the foundation of the approach since the differences in genres allow for students to compare the content and form, and also engaging them in discussions about analytical as well as comparative or interpretive questions (Bruhn, 2020, pp. 217-222). The method consequently does not rely on fictional narratives only, but nevertheless, Bruhn provides suggestions on how to incorporate and teach students to analyse contents, text genres, and their possible effects on the reader.

Two examples of literary works within the climate fiction genre that could prove useful in the classroom are Lunde's *The History of Bees* (2015) and *The End of the Ocean* (2017). The latter is suggested by Bruhn (2020) as a suitable text type for the approach mentioned above. In addition, these novels are also the basis for Pandya's (2021) analysis of

themes within the climate fiction genre. The analysis is a qualitative, close study of the novels and looks toward themes such as climate mitigation, ecological consciousness, and attitudes toward environmental education. In relation to what was mentioned above about the positive aspects of fiction as a didactical tool (Löwe & Nilsson Skåve, 2020), Lunde's novels are relevant for several reasons. Firstly, the novels deal with different perspectives, both a land and water perspective, and different time periods which illustrate the interdependence of actions - how the past is reflected in the future. Secondly, the stories do not explicitly convey what actions are incorrect but instead leave it to the reader to critically reflect upon the connections between different time periods (Pandya, 2021, pp. 78-79). Thirdly, the narratives contribute with an educational aspect which both manage to teach the reader about environmental themes at the same time as they create engagement through inducing "emotional as well as a psychological response thus ensuring a bittersweet experience to the readers" (p. 75). Lastly, Pandya (2021) notes that the novels could also prove useful for students since they do not only display a dark and dystopian setting, but also convey a sense of optimism for the future (p. 78).

One method of how to actively engage students in the contents of climate fiction novels is proposed by Nikoleris et al. (2016) in their article "Narrating Climate Futures: Shared Socioeconomic Pathways and Literary Fiction". In the article, the authors explain how plausible future scenarios, called shared socioeconomic pathways (SSP), can affect the understanding of climate adaptation and mitigation, as well as influence engagement towards environmental issues when applied to literary works of climate fiction (p. 308). The article consists of a qualitative analysis of the relationship between science and literature, comparing five climate fiction novels with the SSP. More specifically the SSPs are intended to describe alternative evolutionary trends in 21st-century society, and thus contribute with general models and narratives of potential future settings where society must deal with climate mitigation and adaptation (p. 309). The authors account for various benefits of applying the SSPs to fiction. For instance, they mention how identifying with characters facilitates engagement, as well as a more personal relationship between the reader and possible climate futures that otherwise might seem distant and abstract (p. 307). In addition, they claim that narrative voice used in novels, generates several perspectives and possibilities for the reader to engage with the events, either critically or sympathetically. By combining the more scientific narratives of SSP with climate fiction, readers are able to see correlations between global and local, as well as individual and social settings. Therefore, the authors assert that

novels carry the potential to illustrate a wider variety of scenarios and solutions, which open for personal encounters that do not fit within the frames of the SSP or other scientific perspectives (Nikoleris et al., 2016, p. 317).

Furthermore, Bartosch (2018), in the article, "Scale, Climate Change, and the Pedagogic Potential of Literature: Scaling (in) the Work of Barbara Kingsolver and T.C. Boyle", contributes with an additional method on how to use climate fiction in an educational manner. Through a selected reading of the novels *Flight Behaviour* (2012) and *The Terranauts* (2016), the author applies the concept of scaling to the narratives with the intention of showing what he considers to be "basic insights for an interdisciplinary take on literature in the environmental humanities" (Bartosch, 2018, p. 3). Similar to what previous works have mentioned, he too acknowledges the advantages of how the fiction genre allows readers to move in time and space and explore the interrelations between different entities. However, he also mentions that the genre contributes to the limitations and conflicts of thinking about everything all at the same time (p. 4). Therefore, he claims readers must be able to reflect upon multiple levels of scales, for instance, to zoom in and out between the localised and the planetary in the narratives. When doing this, readers become aware of the interconnectedness and such a realisation might contribute to changing how we behave and act toward nature (p. 16). In that way, Bartosch (2018) offers a concrete and didactical method of reading climate fiction with a more critical eye.

As previous works have already mentioned, the majority of climate fiction novels depict dark and dystopian environments (Pandya, 2021; Clode & Stasiak, 2014; Ghosh, 2016). In her chapter, "Water as Life and Death - Ecocritical and Didactical Perspectives of Mats Söderlund's Young Adult Novel *Hotet*" [our translation], Salomonsson (2020) further confirms how dystopian young adult novels recently have become a popular genre, often used in educational contexts (p. 186). Therefore, the author suggests how teachers can incorporate fictional novels, specifically *Hotet*, into their education in order to shed light on environmental issues. She argues that the novel in question is beneficial for several didactical reasons. Firstly, because the narrative depicts a society that uses real-life references like journalist Dawit Isaak, creating a sense of authenticity for students which implies that the settings could be an alternative image of our future. Secondly, it portrays the importance of freshwater while also problematizing our relationship between nature and culture. Thirdly, the author notices the interrelation between local and global perspectives, thus aligning with the works of Bartosch (2018) mentioned above (Salomonsson, 2020, pp. 187-188). In addition,

Salomonsson (2020) points at the novel's potential since the narrative, similar to Lunde's novels, manages to display elements of hope and optimism through perspectives illustrated by different generations, human and non-human beings, and both local as well as international sceneries (p. 206).

A final practical method of integrating environmental literature in the classroom is through collaborative learning in terms of literary circles and discussions. Guanio-Uluru (2019) promotes the use of literature circles to make students aware and engaged about the climate emergency. Her study tested the hypothesis of how literature circles can be used as a beneficial pedagogical tool for teaching ESD. This was accomplished by structuring the circles with points of discussion as well as dedicated reading roles asking the participants to specifically focus on a certain perspective when reading and discussing. The results showed that the participants found the method of learning to be applicable and a possible beneficial way of introducing ESD in teaching. In addition, the participating prospective teachers also reported an increased knowledge of environmental issues as well as an enhanced confidence about teaching ESD (p. 16).

To sum up, it is apparent that the question of whether climate fiction could function as a didactical tool to promote environmental consciousness and proactiveness, is a question much discussed. It is also a current question since the climate issue recently has become ever-present in both societal and educational settings. A potential limitation of using climate fiction in education is the risk of inducing negative emotions as a consequence of dystopian settings or even disbelief towards environmental education. Potential benefits for readers of climate fiction, however, include increased knowledge and the possibility to relate and to engage in environmental concerns through literature.

4 Discussion and Pedagogical Implications

As mentioned earlier in the paper, Rockström and Klum (2015) express the difficulties of reaching the general public using only facts and statistics about the urgency of climate change (pp. 10-11). They articulate that pure knowledge about an issue does not lead to behavioural change, thus confirming what Wall Kimmerer expresses: "[f]or what good is knowing, unless it is coupled with caring? Science can give us knowing, but caring comes from someplace else" (2013, p. 345). Likewise, Uhrqvist et al. (2021) argue that ESD involves more than just content. It aims to be a process of lifelong learning that should create engagement and action

readiness among students (p. 149). However, as the study conducted by Guanio-Uluru (2019) shows, prospective teachers still express insecurities about how to teach sustainable education due to the lack of inclusion of ESD in teacher education at university (p. 12). Others also point out how ESD at times result in one-sided moral lectures where students are guided into an already given ideology of values, which makes it difficult to create an inspiring and engaging education. This has been shown to have negative effects on the students as it creates a sense of hopelessness and students feel incapacitated to make a change (Aijmer Rydsjö & Andersson Hval, 2021, pp. 32, 39). Therefore, it is necessary that teachers consider their teaching methods and materials in order not to fall into the traps of quick and easy solutions of ESD.

Clode and Stasiak (2014) claim that the biggest challenge with climate change science does not revolve around understanding causes or consequences, but instead, it depends on communication (p. 19). Wall Kimmerer (2013) also describes that the problem with science is that the stories are hidden in a "language that excludes readers" (p. 345), consequently affecting the public dialogue about environmental issues. This means teachers of ESD could benefit from using literary narratives, in terms of climate fiction, in order to move away from difficult scientific perspectives and instead communicate environmentally conscious attitudes from narratives that enable the students to engage and critically reflect upon the events. In the same way as Rockström and Klum (2015) use photographs to illustrate current issues and inspire people to act, Brereton (2020) argues for the use of audio-visual media to fulfil this purpose. Likewise, it is also possible to claim that climate fiction, as a literary art form, functions as an alternative pathway to reaching and inspiring a wider audience.

However, just like film scholars point out that we cannot expect any drastic changes in behaviour simply by watching a movie or documentary (Brereton, 2020, p. 47), climate fiction will not itself make students care more about the environment. Myren-Svelstad (2020) raises the important point that although there exist many theories of the ethical effects of reading climate fiction, some literary scholars are still sceptical towards the actual relationship between reading climate fiction and ethical, and behavioural change (p. 1). Acknowledging this, it is important to bear in mind the role of the teacher which, for instance, is discussed in the studies of Aijmer Rydsjö and Andersson Hval (2021), and Guanio-Uluru (2019). They emphasise the need for educated teachers who are confident in their teaching of ESD, and they also point out the benefits of collaborative learning. By discussing environmental and societal issues in relation to climate fiction, students can develop the ability to critically

reflect on the human-nature relationship (Aijmer & Rydsjö, 2021, pp. 36-37; Guanio-Uluru, 2019, p. 16). In addition, Lucksinger (2014) also gives an explicit example of how the teacher, through creative methods, can promote engagement if designed with the students' experiences and interests in mind. In short, her educational method "a sense of place", managed to get students emotionally invested and wanting to protect their local environments, which shows the possible impact of a successful ESD.

As it is stated in the syllabus for English in upper secondary school, that students should be exposed to different types of texts and critically reflect on current societal issues such as the climate issue (Engelska, 2021), the teacher also has the important task to choose relevant texts to study. Herein lies the challenge to bridge the gap between fictional and scientific representations of the climate issue in order to make the reader relate to and become more engaged in environmental concerns. One clear example of a well-chosen text's ability to bridge the gap between delivering information and instilling engagement is discussed in Schneider-Mayerson's (2018) study where a participant read climate fiction depicting a future scenario of his former home state Florida being flooded as a result of climate change. The participant could therefore relate to the fictitious novel and thus reported changing his behaviour because the novel had moved him emotionally (p. 488).

This need for climate fiction to relate to the reader is also applicable in educational settings, where, in addition, it is also important that the education meets the students on their level. Simply implementing the methods suggested in Chapter 3.3 without taking into consideration the students' own experiences and prerequisites, the outcome is likely to be inefficient. Similar to a one-sided, predetermined, and authoritative approach - an education too abstract and intricate is also unlikely to make a larger impact on students' behaviour and views regarding sustainable development. It is also worth mentioning the difficulty in measuring the opinions and experiences of both readers of climate fiction and teachers using climate fiction in the classroom. Therefore, the results of this paper are somewhat limited and do not account for an in-depth or empirical view of the research field, even though we have tried to paint a general picture of our findings. As mentioned in Chapter 1.2, the majority of the studies used in this paper have also been performed at a small scale and, therefore, the results might not necessarily be representative on a larger scale.

Even though many of the studies show positive results of how climate fiction can promote environmental consciousness, there are still many other factors to consider for there to be a successful ESD teaching. One of those factors implies that the works of climate fiction

must leave the reader not only informed, but also emotionally engaged and willing to adjust their behaviour into a more environmentally friendly way of living. Another aspect is the importance of the teacher. The teacher's choice of text and method of working with climate fiction is essential in order to engage students. It is therefore clear that reading climate fiction on its own may not always result in increased environmental consciousness, but that a combination of factors is needed. Under the right circumstances, climate fiction has the potential to help readers become more environmentally conscious members of society, willing to act for a sustainable future.

5 Conclusion

The majority of the literature reviewed in this study show positive results on whether climate fiction can help promote environmental consciousness in education for sustainable development. However, as stated above, climate fiction alone cannot necessarily accomplish this, but other factors need to be taken into consideration as well. It is also clear that there is no certain way of predicting the reactions of the reader and, therefore, it is important to have a positive outlook on ESD teaching and to be mindful of the students' interests and experiences to be able to create the best possible outcome: that of environmentally conscious students ready to act for a sustainable future.

Another point of discussion is how, for the most part, the studies reviewed in this paper did not research students' own attitudes toward ESD but were from the teachers' or prospective teachers' perspectives. As it is crucial to discover the opinions of the students in order to find out if climate fiction can be beneficial to education for a sustainable future, this displays a possible gap in current research and a need for future empirical studies within the field.

With this study, we intended to examine if climate fiction could function as a tool to help address climate change in upper secondary school in EFL teaching. By starting on a more global scale, studying general opinions on and reactions from the readers of climate fiction, we found both limitations and possibilities of climate fiction and its use to create engagement about the climate emergency. We then focused on a more local scale, analysing the same question, but now also taking into account the Swedish educational frameworks. Lastly, to test the achievability of using climate fiction in ESD, we studied the pedagogical implications and the possible practical methods of introducing climate fiction in education.

To conclude, using climate fiction in the EFL classroom, aligns with the educational frameworks of Swedish upper secondary school and can, under appropriate circumstances, function as a significant tool to help address environmental issues in education for a sustainable development.

References

Andersson Hval, U., & Aijmer Rydsjö, C. (2021). Klimatkrisen i klassrummet: Reflektioner kring användning av litteratur i undervisning om hållbar utveckling [The Climate Crisis in the Classroom: Reflections about the use of Literature in Education for Sustainable Development]. *Utbildning och Lärande*, *15*(2), 27-44. https://doi.org/10.58714/ul.v15i2.11242

Bartosch, R. (2018). Scale, Climate Change, and the Pedagogic Potential of Literature: Scaling (in) the Work of Barbara Kingsolver and T.C. Boyle. *Open Library of Humanities, 4*(2), 1-21. https://doi.org/10.16995/olh.337

Brereton, P. (2020) An Eco-Reading of Documentary/Fictional Narratives. *Irish Studies in International Affairs, 31*, 43–57. https://doi.org/10.3318/ISIA.2020.31.9

Bruhn, J. (2020). Mind the Gap - Naturvetenskaplig kunskap och litteraturundervisning [Mind the Gap - Scientific Knowledge and Literary Education]. In C. Löwe & Å. Nilsson Skåve (Eds.), *Didaktiska perspektiv på hållbarhetsteman: I barn- och ungdomslitteratur* [*Didactical Perspectives on Sustainable Development-themes: In Children's and Young Adult Literature*] (pp. 209-223). Natur & Kultur.

Clode, D., & Stasiak, M. (2014). Fictional Depictions of Climate Change: An Analysis of Themes from Contemporary Climate Change Literature. *The International Journal of Climate Change Impacts and Responses, 5*(4), 19–29. https://doi.org/10.18848/1835-7156/cgp/v05i04/37220

Ghosh, A. (2016, October 28). Amitav Ghosh: Where is the Fiction About Climate Change? *The Guardian*. https://www.theguardian.com/books/2016/oct/28/amitav-ghosh-where-is-the-fiction-about-climate-change-

Guanio-Uluru, L. (2019). Education for Sustainability: Developing Ecocritical Literature Circles in the Student Teacher Classroom. *Discourse and Communication for Sustainable Education, 10*(1), 5-19. https://doi.org/10.2478/dcse-2019-0002

Indellicato, R. (2021). Bioethics and Ecopedagogy. *Journal of Modern Science, 47*(2), 153–172. https://doi.org/10.13166/jms/143239

Lucksinger, A. (2014). Ecopedagogy: Cultivating Environmental Consciousness through Sense of Place in Literature. *Pedagogy, 14*(2), 355-369. https://doi.org/10.1215/15314200-2400539

Läroplan (Gy11) för gymnasieskolan. (n.d.). Skolverket. Retrieved October 2, 2023, from https://www.skolverket.se/undervisning/gymnasieskolan/laroplan-program-och-amnen-i-gymnasieskolan/laroplan-gy11-for-gymnasieskolan

Löwe, C., & Nilsson Skåve, Å. (Eds.). (2020). *Didaktiska perspektiv på hållbarhetsteman: I barn- och ungdomslitteratur* [*Didactical Perspectives on Sustainable Development-themes: In Children's and Young Adult Literature*]. Natur & Kultur.

Myren-Svelstad, P. (2020). Sustainable Literary Competence: Connecting Literature Education to Education for Sustainability. *Humanities, 9*(4). https://doi.org/10.3390/h9040141

Nikoleris, A., Stripple, J., & Tenngart, P. (2017). Narrating Climate Futures: Shared Socioeconomic Pathways and Literary Fiction. *Climatic Change, 143*, 307–319. https://doi.org/10.1007/s10584-017-2020-2

Pandya, M. J. (2021). 'Climate Fiction Narratives': A Study of Maja Lunde's Novels – The History of Bees and The End of the Ocean. In *The European Conference on Arts & Humanities 2021: Official Conference Proceedings* (pp. 71-80). The International Academic Forum. https://doi.org/10.22492/issn.2188-1111.2021.6

Rockström, J., & Klum, M. (2015). *Big World Small Planet: Välfärd inom planetens gränser* [*Big World, Small Planet: Abundance Within Planetary Boundaries*]. Max Ström.

Salomonsson, A. (2020). Vatten som liv och död - Ekokritiska och didaktiska perspektiv i Mats Söderlunds ungdomsroman Hotet [Water as Life and Death - Ecocritical and Didactical Perspectives of Mats Söderlund's Young Adult Novel Hotet]. In C. Löwe & Å. Nilsson Skåve (Eds.), *Didaktiska perspektiv på hållbarhetsteman: I barn- och ungdomslitteratur* [*Didactical Perspectives on Sustainable Development-themes: In Children's and Young Adult Literature*] (pp. 186-208). Natur & Kultur.

Scharenberg, K., Waltner, E. M., Mischo, C., & Rieß, W. (2021). Development of Students' Sustainability Competencies: Do Teachers Make a Difference? *Sustainability, 13*(22). https://doi.org/10.3390/su132212594

Schneider-Mayerson, M. (2018). The Influence of Climate Fiction. *Environmental Humanities, 10*(2), 473-500. https://doi.org/10.1215/22011919-7156848

Uhrqvist, O., Carlsson, L., Kall, A. S., & Asplund, T. (2021). Sustainability Stories to Encounter Competences for Sustainability. *Journal of Education for Sustainable Development, 15*(1), 146-160. https://doi.org/10.1177/09734082211005041

Wall Kimmerer, R. (2013). *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teaching of Plants*. Penguin Books.

What is Education for Sustainable Development? (n.d.). University of Plymouth. Retrieved October 2, 2023, from https://www.plymouth.ac.uk/students-and-family/sustainability/sustainability-education/esd

Ämne - Engelska. (n.d.). Skolverket. Retrieved October 2, 2023, from https://www.skolverket.se/undervisning/gymnasieskolan/laroplan-program-och-amnen-i-gymnasieskolan/gymnasieprogrammen/amne?url=-996270488%2Fsyllabuscw%2Fjsp%2Fsubject.htm%3FsubjectCode%3DENG%26version%3D6%26tos%3Dgy&sv.url=12.5dfee44715d35a5cdfa92a3