Climate activism, environmental justice and ecopedagogy – a collaboration project between FFF activists and trainee teachers in Austria

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Abstract

This article contributes to political ecologies of education by connecting climate activism in Austria to questions of environmental justice and ecopedagogy. Based on a collaboration project between trainee teachers and secondary school students in Graz (Austria), the article analyses student group essays and photo reports dealing with ideas and solutions to combat the climate crisis and to enable socio-ecological transformation. Interviews with Fridays for Future (FFF) strike participants complete the analysis. I discuss propositions related to the concepts of activism, ecopedagogy, environmental and climate justice, and especially the principle of responsibility. I show that the school collaboration project and common participation in a climate strike contributed to civic engagement and research-based learning. Trainee teachers and school students exchanged ideas and co-created knowledge to fight against the climate crisis, and the collaboration opened a dialogue in a democratic classroom, arguably helping to develop participants' intrinsic motivation. While some of the ideas proposed are reformist or oppositional, for example to eat less meat, others are propositional, advocating for system change. A conclusion is that the climate movement is represented by a diversity of voices and opinions.

Keywords: Climate activism, environmental justice, ecopedagogy, cooperation, Fridays for Future, responsibility, socio-ecological transformation

Résumé

Cet article contribue aux écologies politiques de l'éducation en reliant l'activisme climatique en Autriche aux questions de justice environnementale et d'écopédagogie. Basé sur un projet de collaboration entre des étudiants et des élèves de l'enseignement secondaire à Graz (Autriche), l'article analyse des dossiers et des reportages photo de groupes mixtes d'étudiants et d'élèves traitant d'idées et de solutions pour lutter contre la crise climatique et permettre une transformation socio-écologique. Des interviews avec des participants à une manifestation du mouvement Fridays for Future (FFF) complètent l'analyse. Je discute des propositions liées aux concepts d'activisme, d'écopédagogie, de justice environnementale et climatique, et en particulier du principe de responsabilité. Je montre que le projet de collaboration scolaire et la participation commune à une manifestation pour le climat ont contribué à l'engagement civique et à l'apprentissage basé sur la recherche. Les étudiants et les élèves ont échangé des idées et ont co-créé des savoirs pour lutter contre la crise climatique, et la collaboration a ouvert un dialogue dans une classe démocratique, contribuant sans doute à développer la motivation intrinsèque des participants. Si certaines des idées proposées sont réformistes ou oppositionnelles, par exemple manger moins de viande, d'autres sont propositionnelles et prônent un changement de système (économique). La conclusion est que le mouvement pour le climat est représenté par une diversité de voix et d'opinions.

Mots clés: Activisme climatique, justice environnementale, écopédagogie, coopération, Fridays for Future, responsabilité, transformation socio-écologique

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1. Introduction

With growing awareness of the impacts of climate change and its implications for the present and the future, many citizens, especially young people, see an urgent need to bring about a socio-ecological transformation. Initiated by Swedish climate activist Greta Thunberg, the climate movement know as Fridays for Future (FFF) demands political leaders take measures to limit global warming to 1.5° as committed to in the 2015 Paris Agreement. The Agreement cannot be reached with existing emissions levels. Given that the combined effect of national mitigation efforts, including many of its signatories, put the world on course for as much as 3° of warming or more by 2100, the disconnect between scientific analyses and government action has become a major concern for climate movements (IPCC, 2021; Thomas *et al*., 2019).

At the international level, the mainstream 2015 UN Sustainable Development Goals (SDGs), building on the less ambitious Millennium Goals, also appear deficient in effectively combating the climate emergency and limiting global warming to 1.5°. Krauss *et al*. (2022: 1855) argue that "trade-offs, absences and justice shortcomings call into question the attainment of the SDGs' objectives of leaving no one behind." SDG 13 directly addresses actions to combat climate change (UN, 2015), but several scholars (e.g. Kopnina, 2020; Menton *et al*., 2020; Paulson, 2017) criticize the SDGs as contradictory, endorsing neoliberal forms of 'green' economic growth, hampering more radical emissions reductions and transition efforts: namely, degrowth in richer nations and scaling back most carbon-intensive behaviors and projects. Paulson (2017: 429) notes that some SDGs are incommensurate: SDG 10 (*Reduce inequality within and among countries*) "may or may not be achievable in tandem with sustained economic growth." Economic growth and industrial development, permitting continued overconsumption and increasing demands for natural resources, are the root of environmental damage, planetary-scale decline of biodiversity, and the climate crisis (Kopnina, 2014; Washington, 2015). Menton *et al*. (2020: 1633) compare economic growth with an "elephant in the room." Hickel (2019: 18) calls for a "shift to post-capitalist economic models." Based on biophysical indicators provided by O'Neill *et al*. (2018), he argues that it is theoretically possible to achieve a good life for all within planetary boundaries in poor nations, but richer nations must reduce their biophysical footprints by 40–50% (ibid.).

Climate movements like FFF call for urgent action along these lines, based on dissatisfaction with the slow pace of top-down responses to climate change. They argue that the urgency of the climate crisis means that political and economic leaders should immediately assume major responsibility for transforming carbon intensive economies and societies. FFF, as a youthful movement present in several countries, fosters greater

student consciousness of climate-friendly measures and sustainability practices. This article provides a concrete example of the enactment of one aim of the FFF movement, where climate activism has led to student knowledge acquisition, and action on the climate emergency.

A political ecology of education should address how schools operate as a site for climate activism. The case I discuss is a cooperation project between secondary school students and trainee teachers in Graz (Austria) participating in a climate strike in November 2019, showing how they worked on sustainability and climate change solutions and incorporated these into classroom teaching and extracurricular learning. In total, 21 secondary school students and 24 trainee teachers were involved in the project. Following this cooperation project in 2019/20, trainee teachers from University College of Teacher Education in Graz again took part in a climate strike in March 2022, conducting interviews with strike participants. The main focus of the article is to explore how trainee teachers and secondary schools engage together in climate activism and what ideas and solutions they propose to fight the climate crisis and foster socio-ecological transformations. In a second step, I draw lessons from these proposals in terms of activism, ecopedagogy, environmental and climate justice, and the principle of responsibility.

The first part of the article discusses the theoretical background to a political ecology of education, including climate activism, environmental justice (especially the principle of responsibility), and ecopedagogy. The outputs of the collaboration project follow, linked to the core concepts of this article. I will highlight whether the ideas and solutions developed by students and trainee teachers are reformist, oppositional or propositional, according to the typology established by O'Brien *et al*. (2017). Critiques of the FFF movement and its aims are addressed. I will show how cooperation can co-create knowledge and enable dialogue between different points of view, relating this to theories of activism. The article finishes with reflections on going beyond school curricula and textbooks in climate activism and Earth consciousness, with an analysis of the collaboration process. Without overstating the case, I argue that such cooperation, which includes discussions on pathways to fight the climate emergency and the integration of theoretical approaches like climate justice and with environmental action, can make an enriching contribution to the political ecologies of education.

2. Climate activism and environmental action

According to Sleeter & Cornbleth (2011), the engagement of young people in activism around climate is highly desirable, and not only because of the failures of older generations to significantly address emissions. Their empowerment requires students to feel that they have the rights, responsibilities, and competencies to participate in complex thinking, decision-making and problem-solving processes (see also Reis, 2020). Instead of being spectators relying on expert opinions, students become active problem-solvers, translating scientific warnings into actions. Competencies such as complex thinking and decision-making, and implementation of democratic activism are rare in "normal" classroom activities and standardized curricular units, bound by academic performance criteria, in the schools of Western democracies. I thus argue that students' involvement in climate activism initiatives are a key element for socio-ecological transformation, sustainability education and ecopedagogy.

To achieve deep socio-ecological transformation in our societies, one emerging trend is the development of critical objectives in environmental learning and environmental action by youth (see e.g. Reis *et al*., 2015; Schusler & Krasny, 2010). In climate movements such as Fridays for Future, students and young people articulate and enact a desire to participate collectively. O'Brien *et al*. (2018) emphasize the diversity of youth engagement by establishing a typology of climate change activism: a) dutiful dissent, b) disruptive dissent, c) dangerous dissent.

The first type ("dutiful dissent") works within existing systems and power structures to effect policy change. Therefore, the approach is reformist. The second ("disruptive dissent") contests prevailing social norms and policy practices to redirect policy and change outcomes. For example, instead of helping to develop environmental or ethical investments, a person actively campaigns against petroleum industry projects and calls for government reforms. The approach is thus oppositional. The third approach ("dangerous dissent") is propositional, because activists want to create and (re-)generate new and alternative systems, subverting existing power structures by mobilizing citizens around new norms and values (O'Brien *et al*., 2018: 42).

Activists relating to this third approach are arguably 'dangerous' for current (environmental and climate) politics because they bypass established power relations and challenge existing political systems.

Climate activism can, therefore, take different forms (e.g. Stitzlein, 2012; Hörschelmann, 2016). In this article, I argue that FFF Austria is a diffuse movement with different actors having different approaches straddling the three domains. Their demands for the Austrian government include six main objectives:

- Implementation of climate and ecological emergency measures;
- Linear reduction of greenhouse gas emissions by 2025 to 50% compared to 2005, and to net zero by 2030;
- Anchoring of climate protection in the constitution, with the withdrawal from oil, coal and gas by 2030[2];
- Eco-social tax reform;
- Measures to promote biodiversity;
- Stop major fossil fuel projects[3]; including the linked construction and expansion of airports and freeways.

FFF Austria calls for official support for, and development of, transition measures by political and economic authorities. Some of their demands have a reformist character by requesting eco-social tax reform, for example. The activists think that existing political measures in Austria are not sufficient to reach climate neutrality by 2040 (as promised by the Austrian government at the 26th Conference of the Parties, COP 26, in Glasgow 2021) or to limit global warming to 1.5°. For example, they say that a consistent energy savings programme is still missing, and that a ban of plastic bags is not enough. Some of the requests go further and could be considered as "propositional", for example the claim to stop big fossil fuel projects within a context of edgrowth (e.g. the expansion of Vienna airport). Whether this request can be carried out within existing power structures is debatable.

Referring to Hodson's (2003) definition of socio-political action, climate activism such as Fridays for Future are a form of participation, requiring the capacity and commitment to carry out appropriate, responsible, and affective actions regarding social, economic, and environmental issues (see also Linhares & Reis, 2017). I concur with Hodson (2003) who emphasizes that educating for socio-political action implies recognizing that the environment is a social construct on which we act, and which changes through our actions. Activism empowers citizens to act for environmental and sustainability transitions. Students become "prepared to understand underlying issues" (Hodson, 2014: 70), and gain deeper knowledge of political power relations and how to defend their point of view. Greta Thunberg's presence on the world stage as a high school student (until 2023) has demonstrated to many other students what can be achieved. Teaching-learning situations that allow students to act (at school or in places of extracurricular learning) "considerably increases their likelihood of becoming active citizens" especially when there are political debates and question on decision-making (Linhares & Reis, 2017: 90). We argue that "demonstrations and exhibitions as forms of bottom-up climate activism contribute to engagement in political dialogue" (Kowasch *et al*. 2021).

Schusler & Krasny (2015: 367) note that environmental action provides a "context for learners to engage in scientific inquiry toward specific social purposes." Such inquiry-based science education, in which students acquire arguments and learn about the data and theories used by climate scientists, is essential – together with civic engagement of youth – for environmental/climate activism and action (Figure 1). Inquiry activities encourage students to describe objects, raise and discuss questions, evaluate explanations, analyse scientific data and propose new ideas related to global environmental and climate issues.

[2] The extraction of oil and natural gas in Austria is small, it mainly takes place in the northeast of the country. In 2021, Austria produced 571,428 t of oil, which covered 7% of the Austrian needs (Federal Ministry of Finance, 2023). The activists might have thought about import of fossil fuels, which is an important issue in Austria.

[3] See note 1.

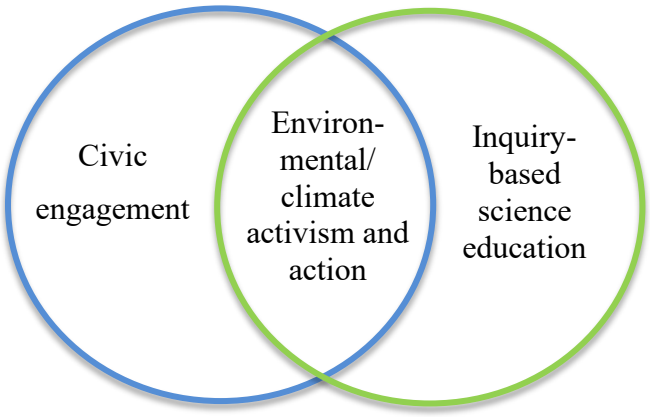

Figure 1: Representative scheme of environmental/climate activism and action occurring at the intersection between civic engagement and inquiry-based science education. (retrieved and modified from Schusler & Krasny, 2015)

3. Environmental and climate justice

The concept of environmental justice (EJ) emerged in the US in the 1970s and 1980s in the form of civil rights struggles against the dumping of hazardous waste and was closely linked to issues of race and justice (Schlosberg 2004; Benjaminsen & Svarstad, 2021). Since the turn of the millennium, EJ scholarship has geographically expanded to places outside the US. The literature has widened both thematically and in academic and non-academic writing (Martinez-Alier *et al*., 2014; Benjaminsen & Svarstad, 2021).

The political scientist Schlosberg (2004) draws on a radical justice tradition within political philosophy that emphasises the three core elements of *distributive*, *recognition*-based and *procedural* justice (see also Svarstad & Benjaminsen 2020).[4] The first element, *distributive* justice, refers to the (unequal) distribution of burdens and (financial) benefits related to environmental projects and interventions. Different dimensions of vulnerability, need and responsibility are addressed (Walker, 2012). Vulnerability refers to the fact that some people are more affected by environmental damage than others and may also have less capacity to recover from it. Bullard *et al*. (1997) highlighted this, largely in the racially charged United States, identifying the correlation between racism and environmental justice. Racism renders some people invisible and vulnerable to environmental damage and exploitation, classically through co-location with toxic industries. Needs, however, vary among the different communities affected. Bullard *et al*. argue that the originators of environmental destruction should fix the problem. and/or compensate those who have carried the burdens. The FFF movement follows this responsibility principle, often claiming that those who have caused damage should pay for recovery, and that all citizens should take responsibility for their actions.

Recognition, the second dimension of the radical EJ approach, means ending the marginalization of certain groups that has led to unequal distribution of benefits and costs. The third element of the framework, *procedural* justice, refers to participation in decision-making and addresses imbalances between the various actors involved.

With regards to the principle of responsibility within the core element of distributive justice, Evans *et al*. (2017) criticize the allocation of responsibility to consumers for generating food waste and unsustainable patterns of consumerism. They note a shift from the politics of blaming consumer behaviour to the narrative of "distributed responsibility" (ibid.: 1408), recognising the consumer often lacks access to better forms of consumption. The "distributed responsibility" approach argues that they share responsibility with economic

[4] There are other types of EJ including liberal EJ studies and critical EJ, and Schlosberg also added a fourth element, a capabilities approach (Pellow, 2018, Svarstad & Benjaminsen 2020).

actors (such as supermarkets) and political leaders who legitimate wasteful consumer goods. Based on a quantitative study of over 1,000 people, Palm *et al*. (2020: 827) support this, highlighting the counterintuitive finding that exhorting consumers to behave responsibly actually "decreased individuals' willingness to take personal actions to reduce greenhouse gases", and "decreased willingness to support pro-climate candidates" in elections. FFF speakers transpose this to political leaders, who they say promote positive change while failing to take the necessary environmental and economic decisions required.

Álvarez & Coolsaet (2020: 50) note that "environment" and "justice" are "often defined through Western ways of thinking." Examples include undermining modes of (community) life, using a Western form of "participation" in environmental monitoring that allows injustice to continue. They argue this is a perpetuation of coloniality, with a tendency to ignore non-Western (environmental and societal) practices. A grassroots political ecology must acknowledge a variety of knowledge configurations (Benjaminsen & Svarstad, 2021; Álvarez & Coolsaet, 2020). In the following, I will now illustrate the thematic bridges between political ecology, environmental justice and sustainability education.

4. Political ecologies of education and ecopedagogy

Political ecology scholars have been at the forefront of studies of conservation ideals and practice (Büscher & Fletcher, 2020) and food justice (Cadieux & Slocum, 2015), but also on the decolonization of environmental science (David-Chavez, 2019; Neimark *et al*., 2019). Moreover, there are connections between political ecology and sustainability (e.g. Siamanta, 2021) and environmental education (Meek & Lloro-Bidart, 2017). Meek & Lloro-Bidart (2017: 217) state that the emergent political ecology of education "provides fruitful ground for problematizing and re-imagining curricula and policy that posit human beings on the one hand as incapable of managing natural resources without enclosure and privatization and on the other as 'masters' of ecosystems, forests, and other nonhuman nature." New critical lenses and narratives are needed in school textbooks and curricula, because they are potential agents of change contributing to these transitions (e.g. Chambers, 2008, Llora-Bidart, 2015). Stastny & Kowasch (2022), for example, determine that geography textbooks in the French overseas territory of New Caledonia-Kanaky still promote a neoliberal paradigm of economic growth, resulting in little attention in schools to Indigenous knowledge and loss of biodiversity across a fragile archipelago with extensive mining operations. Political ecologists request the inclusion of alternative economic narratives and indigenous knowledge into school textbooks, and pluralistic approaches to environmental knowledge and economics – New Caledonian (geography) textbooks should therefore be modified and updated.

One focus of political ecologies of education is the exploration of decolonizing environmental education (Meek & Lloro-Bidart, 2017, see also Meek, 2020, Batterbury & Rodriguez, 2023), by analysing decolonial agroecological education and relations to territory, for example. Several authors (e.g. Stastny & Kowasch, 2022; Black, 2017) have shown that Indigenous environmental practices are often still considered as backward in mainstream education systems, and indigenous knowledge as a form of mythology. In a study of forest education in Tanzania, Sungusia *et al*. (2020: 354) determine that "scientific forestry principles from a colonial past have persisted until the present." According to Iseke-Barnes (2008), engaging students in Indigenous pedagogies opens the opportunity to understand that transformation can take the form of disrupting dominant discourses, which is itself a key strategy for decolonizing education (see also Kayira *et al*., 2022). Several scholars have incorporated Indigenous traditions of teaching and learning into seminars and lectures (e.g. Cajete, 1994; Ragoonaden & Mueller, 2017; Kayira *et al*., 2022) and argued that it provides opportunities for students to share and learn in a culturally inherent manner. Within some Indigenous worldviews, it is common for human beings to be considered equally and in relation to other life forms, tearing down the classical dichotomy between nature and culture. Social resilience to global environmental changes emerges as part of these worldviews, and societies engage in multiple ways of knowing, including through spirituality and maintaining their customary values (Knudtson & Suzuki 1992; Whyte 2018). This approach involves a commitment to a plurality of knowledge, worldviews, and agencies, in which land or 'territory' is perceived as sacred (Stastny & Kowasch, 2022).

A second focus of political ecologies of education offers critiques of nature-culture dichotomies "that posit some forms of nature as inherently more desirable than others" (Meek & Lloro-Bidart, 2017: 219). Bellino & Adams (2017) argue that nature-culture dichotomies marginalize the experiences of urban youth by constructing their neighbourhoods as devoid of nature. While hierarchies of different forms of nature are criticised by political ecologists, the concept of ecopedagogy advocates for the education of planetary citizens to adopt life-long caring and appreciation for nature (Gadotti, 2000; see also Kopnina, 2020). Ecopedagogy is inspired by the work of the Brazilian educator and activist Paulo Freire (1921-1997) on critical pedagogy (Kahn, 2010). It is in line with ecocentric education (Shrivastava, 1994) that takes a non-anthropocentric perspective involving justice for both humans and nonhuman species as well as the environment. In a more ambitious vision, it contributes to political and legal instruments safeguarding against ecocide, with informed youth supporting eco-representation (Gray & Curry, 2016) in ecological democracies. Rooted in social relationships, ecojustice philosophy serves as "an important theoretical bridge to environmental and science education" (Reis *et al*., 2015: 41). Toro's work is based on the Charter of Ecopedagogy (cited in Gadotti, 2000), and from that position he evaluated four essential foci stemming from Reclus (1830-1905) and Kropotkin (1842-1921). First, Toro challenges the ontological confrontation of human-nature relationships. Second, he develops the idea of an Earth consciousness. He notes, according to Reclus (quoted in Clark & Martin, 2013: 25), "when humanity degrades the natural world, it degrades itself." Therefore, Reclus calls attention to an ecological uprooting of humankind. Third, Toro aims at constructing a paradigm of human welfare based on justice and equity. Forth, ecopedagogy is intended to rethink basic principles of democracy and should foster "self-sufficient and cooperative communities" (Toro, 2016: 209). Therefore, ecopedagogy principles can be connected to the political ecology of education, which aims to develop methodological and theoretical tools necessary to transform the world around social and environmental justice concerns (Meek, 2015).

We will see in the following how climate activists claim the need for environmental/climate justice and contribute to ecopedagogy and the political ecologies of education through a collaboration project between secondary schools and trainee teachers.

5. Case study and methods

Referring to the concept of environmental justice, especially the responsibility principle, climate activists claim that all citizens, and politicians in particular, should take responsibility for their actions. The starting point for this collaboration project was to explore what actions and measures secondary school students and trainee teachers (in Graz, Austria) propose for social-ecological transformation and for climate action. Moreover, the secondary school students involved in the project were under 18 years old and not eligible to vote. The reason to work with them was also to learn about their ideas concerning the climate crisis as a form of participation in democratic citizenship and of eco-representation.

Participants and research design

My case study is based on a cooperation project between secondary school students, mostly engaged in the FFF movement, and trainee teachers in Graz. The project took place within a compulsory university seminar (winter semester 2019/20) on extracurricular learning and project work, being part of the Master of Education in geography and economics at PH Steiermark (University College of Teacher Education Styria) that I have continued to teach. The project involved 24 university students, and 21 students from two secondary schools in Graz. Before the start of the semester, I approached different geography teachers to ask for their participation in the project. Two secondary school teachers agreed and the project was developed in collaboration with them.

We brought the trainee teachers to the two different secondary school classes to meet the students and to set up study groups. The trainee teachers were divided into seven groups of three to four students. Five groups (Group 1, 2, 3, 4 and 7; Figure 3) collaborated with a class of 15 students of the first (A) secondary school (9th grade, 14-15 years old). One group (Group 5) worked together with six students (from different classes and ages) of the working group "Climate" at the second (B) secondary school. The final trainee teachers' group (Group 6) engaged and cooperated with the local FFF committee (Table 1).

Following the seminar on extracurricular learning and project work in 2019/20, 17 other trainee teachers again participated in a climate strike on 22 March 2022, within a seminar on sustainability and economics (Bachelor level) (summer semester 2020). A seminar group of two students conducted the semi-structured interviews with strike participants, asking a) about their reasons for joining, b) what measures they take to fight against the climate emergency, and c) what measures politicians should take.

Data collection and analysis

The aim of this collaboration project was to encourage mutual understanding between FFF activists and trainee teachers, and to discuss the movements' (political) demands. Together, they participated in the global climate strike in the inner city of Graz with around 3,500 participants on 29 November 2019. Secondary and university students were asked a) to report their collaboration; b) to describe their participation in the climate strike; and c) to discuss possible solutions and assertions made about socio-ecological transformation and more sustainable futures.

The seven mixed groups – consisting of 3-6 secondary school students (15-17 years old) (and in addition the local committee of FFF) with 2-4 university students (Figure 3) – were asked to produce a photo report as an output of the collaboration project, and an article or a short documentary film that would include measures to combat the climate emergency, and including an explanation of the methodological aspects of the collaboration and the preparation of the climate strike. After participating in the climate strike in Graz, the groups had 2.5 months to write the report and to make the documentary film. As highlighted by Reis (2020), students, scientists and politicians achieving greater collaboration in this way can be a forum for liberatory dialogue, and an exercise in environmental citizenship.

One group (Group 4) made a short documentary film including interviews with strike participants (accompanied by a report that analysed the interviews in the film), another group created a photo journal, and five wrote reports illustrated with photos (Table 1). Among the five groups producing a report, one group (Group 5) included an analysis of interviews that the trainee teachers conducted with the secondary school students engaged as climate activists within their collaboration.

Mayring's (2015) technique of structuration was used to analyse the sample of reports and articles. This technique is based on a deductive or an inductive establishment of categories – in this case study inductive, because the categories were identified after reading the essays and (photo) reports (and not before). The categories relate to solutions and ideas to solve the climate emergency: in the areas of food consumption and fashion, and waste and packaging. These topics appeared to be the most important for students and activists, possibly reflecting the spirit of an urban consumer culture in Graz. I will analyse how these topics are mentioned or more broadly discussed in the sample. In addition, I established categories on the political claims of FFF, critical reflections on the FFF movement, the viewpoint of parents, the climate strike on 29 November 2019, and on the project collaboration process. The viewpoint of parents, comments on participation in the strike and on the collaboration process helped to shed light on the process of learning from and with young activists, and on the strike organisation and objectives.

The student essays and (photo) reports were analysed in relation to the key concepts of activism, environmental justice, degrowth, ecopedagogy and to the principle of responsibility as one element of the radical EJ framework. Reflections on project collaboration linked to climate activism completed the analysis.

Finally, the results of the six interviews with strike participants in March 2022, which lasted between two and five minutes, were analysed according to Mayrings' (2015) technique of structuration and categorization. They complete the results from the collaboration project.

Ethics and communication

Both secondary school students and trainee teachers agreed to share their respective work with other students. At the end of the project, the seven mixed groups of students and trainee teachers had to present their outputs in the seminar on extracurricular learning and project work at the University College of Teacher

Education. The groups were also told that the results may be presented at scientific conferences with suitable anonymity. An example was at the World Environmental Education Conference (WEEC) in 2022.

6. Results

The collaborative work with secondary school students and climate activists from the FFF movement provided an opportunity for trainee teachers to learn about the involvement of school students in climate activism, and about critical reflections and their visions for sustainability transition including on topics such as fashion, food and waste management. Together, they created posters and banners for the climate strike on 29 November 2019 (Figures 2 and 3), and essays, (photo) reports and documentaries as outputs, which can contribute to the content of teaching geography in schools and universities.

Group	Group & collaboration	Type of output	Topics	Methods used	Pages
1	Collaboration between 2 university students and 4 secondary school students from secondary school A	Essay	Planetary boundaries, history and claims of FFF, moralization, Greta Thunberg, students' (critical) perspectives on FFF; project collaboration work	Interviews with group members of secondary school A; literature search	26
2	Collaboration between 4 university students and 4 secondary school students from secondary school A	Photo report	Zero waste, sustainable cooking, fashion and mobility; Students' (critical) perspectives on FFF, Greta Thunberg and sustainable diets; project collaboration work	Interviews with group member of secondary school A; literature search, self-organized visit of shops in Graz promoting organic food, slow fashion etc.	31
3	Collaboration between 4 university students and 3 secondary school students from secondary school A	Essay illustrated by photos	Mobility, waste reduction and food; sustainability behaviour, FFF claims, climate crisis explanations, climate change measures of the Austrian govern-ment; project collaboration work	Literature search; comparison study; comments to strike poster (secondary school student)	28
4	Collaboration between 4 university students and 4 secondary school students from secondary school A	Video & essay	Air pollution, traffic, plastic packaging, fast fashion, regional food; project collaboration work	Semi-structured interviews with strike participants; video-making; analyses of the documentary video and interviews; literature search	20

5	Collaboration between 4 university students and 6 secondary school students from secondary school B (climate working group)	Essay illustrated by photos	Individual reduction of ecological foot-print, sustainability behaviour; participation in FFF, opinion on Greta Thunberg; project collaboration work	Literature search; interviews with group members of secondary school B; common essay writing	25
6	Collaboration between 3 university students and the local FFF committee	Essay	FFF claims and government programme on climate change	Comparison study; literature search	20
7	Collaboration between 3 university students and 3 secondary school students from secondary school A	Report "Fridays for Future" from the perspective of the parents	Parents for Future and motivation to participate in climate strikes; project collaboration work	Common report writing; literature search; semi-structured interviews with parents of FFF activists	11

Table 1: Sample of student outputs.

Plastic packaging and/or waste occupied an important place in the responses: three student outputs (Groups 2, 3 and 4) had a chapter on it, and three others (Groups 1, 5 and 7) referred to it within interviews and statements. Similar to plastic (packaging) and/or waste, three student work outputs (Groups 2, 3 and 4) dedicated chapters or paragraphs on food and diet as a topic relevant to greater positive socio-ecological transformation and more sustainable futures. Three other outputs (Groups 1, 5 and 7) mentioned food and diet in interviews. In addition to requests to buy organic food products, four out of five student groups proposed eating less or no meat, and to consider seasonality and regionality. Except for one, all groups reflected on the collaboration process between trainee teachers and secondary school students.

In the following, I will present the main ideas that emerged related to a socio-ecological transformation process and the different topics dealt with, starting with food and fashion.

Ideas for a socio-ecological transformation related to food consumption and fashion

Fashion was an issue discussed within the student outputs and was also mentioned in the interviews with activists at the climate strike in March 2022. The topic was discussed in sections of the photo report of Group 2, and the essay of Group 4. The essay written by Group 5 mentioned the topic within an interview (Table 1).

In the photo report of Group 2, a secondary school student and climate activist Paula[5] highlighted that she decided, "a few months ago", to "stop buying new clothes." She explains the choice with the "the unbelievably bad working conditions of the workers" and with "the long transport routes that a piece of clothing covers." In addition, she highlighted the high consumption of water during the production process. She said that she now only buys clothes second hand. And if something gets broken, Paula tries to "…repair it or at least recycle the fabric and use it for a home-made garment."

The Group 4 essay also deals with fast fashion and second-hand clothes, as well as regional food products. The group highlights that, for the American market, "97% of all garments are produced in low-wage countries such as Cambodia or Bangladesh." And they articulate that garments are produced under the most

[5] All names in this article are pseudonyms.

appalling conditions and for starvation wages. The group's report references the release of toxic substances into the environment during production as something that "is completely ignored by fashion brands like Zara and H&M." The students and trainee teachers, however, propose solutions to the problem, including the production of sustainable fashion from natural materials, and buying less and enjoying what one already has. The group also mention the countermovement of so-called 'slow fashion.' They note that second-hand clothing shops in Graz, such as CARLA, a Caritas donation market, where well-preserved items of clothing, books, furniture, decorative objects, toys, dishes, etc. can be found.

For the Group 5 essay, trainee teachers conducted interviews with their secondary school student group members. In the interviews, measures for climate and environmental protection were highlighted, saying for example that they eat little meat and mostly seasonal fruit and vegetables. One of the interviewees at the strike in March 2022 replied to the question of what she is doing to fight against the climate crisis, that she avoids plastic and buys organic food (Interview with female activist, 2022). Three out of six interviewees at the strike mentioned the importance of buying regional foods, and producing or consuming it.

Ideas for a socio-ecological transformation related to waste and packaging

Waste and packaging were other important issues for the students and trainee teachers involved in the project, and also for the activists interviewed.

The Group 3 essay (Table 1) emphasizes that they had a lengthy discussion about plastic waste. All agreed that it should be avoided as much as possible. For the group, there are two huge problems with plastics. On the one hand, plastic is a very practical material that has become part of our everyday lives. On the other, it does not decay easily. It can last hundreds of years, and the students and trainee teachers argued (referring to a scientific article, Royer *et al.* 2018) that different types of microplastics found in the oceans, release climate-relevant gases such as ethylene and methane.

Political claims of FFF

Group 1 (Table 1) discussed the link between ethics and politics, and also made statements critical of FFF and Greta Thunberg. The students and trainee teachers argued that companies should pay CO_2 taxes. One of the interviewees at the climate strike in March 2022 underlined that claim, and requested additional climate legislation (Interview with male activist, 2022). They argued that economic growth and environmental protection are not compatible. "China invests the most in the environment and in renewable energies", group 1 stated in their essay (Table 1), indirectly criticising European investments in this field. Moreover, the group thought that some of the goals of FFF are not feasible (for example a rapid withdrawal from oil, coal and gas), but it will become more difficult over time to reconcile continued economic growth and sustainable development. Their critical reflections concerning FFF claims and their actions will be discussed in more detail below.

Critical reflections on FFF

The students and trainee teachers of Group 1 emphasize that "many young girls walk through shopping centres every week and spend their money in shops that sell T-shirts for three euros." They think that everybody today knows about the production of fast fashion: the dyes are simply dumped into rivers, harming people, animals and plants. The group criticized FFF for not, or rarely, mentioning this problem. According to their essay, the focus of FFF is on reducing greenhouse gas emissions, but the excessive consumption which is also harmful to the planet is often forgotten.

In an interview, the activist and FFF member Franz (Group 5 essay; Table 1) found some FFF demands very ambitious, but acknowledges that "we need such extreme changes to save the planet." Small deeds are no longer enough. Anna, another activist and FFF member in Group 5, mentions that she grew up at an organic vineyard in southern Styria, contributing to her ecological education. At home, they only had organic and fair-trade food from an early age – lots of vegetables from the garden, meat from their own sheep, from other

organic farms or organic meat from a Spar supermarket. For Anna, FFF is not an excuse not to go to school, but a way to appeal to politicians.

Figure 2 (left): FFF climate strike on 29 November 2019 in Graz (source: author, 2019)

Figure 3 (right): Secondary students and trainee teachers with their posters at the beginning of the climate strike (source: author, 2019)

When students skip school to participate in a climate strike, it is interesting to question how parents react. Do they support such behaviour? I will now move to a discussion of some parental comments.

Viewpoints of parents

Group 7 conducted interviews with the parents of activists. Their comments show a great variety of opinions. Some think that the demonstrations can really lead to change, as politicians are "now dealing with climate change worldwide." They highlighted that "green parties are becoming more important", and "investments in public transport and cycle paths are politically attractive." Others think that the youth movement will not change anything. For example, one parent noted that "Politicians are all talking about environmental protection now – at least in the last elections. But I don't think that the children are concretely changing anything now."

Parents certainly influence the young activists' opinions and their demands to fight against the climate crisis. Youth, of course, move between agreement and dissent with their parents' views. The aim of this article is not to discuss parents' viewpoints, but their insights contribute to understand the activists' ideas for change.

The climate strike on 29 November 2019 and the project collaboration

According to the essay of Group 6 (Table 1), millions of people participated in the 4th global climate strike in November 2019 for compliance with the Paris climate target of 1.5° C. The demands were addressed to politicians, who it was said should finally take responsibility for a climate-friendly future instead of passing on responsibility to consumers. Group 6 requested integrating climate activism into schooling by declaring the participation in the strike as a school event.

The trainee teachers of Group 3 (Table 1) stated that they learnt about the views and problems of young people represented by the Friday for Future demonstrations, and this was a valuable practical experience. Such debates were otherwise scarce in their teaching internships and their degree curricula. Secondary school student Isabella (Group 7; Table 1) explained that the project allowed participants to confide different opinions, world views and concerns about climate change. I will now discuss how the different perspectives, the solutions

proposed by the students and trainee teachers and the participation in climate activism relates to political ecologies of education, environmental justice and socio-ecological transformation.

7. Discussion: political ecologies of education and climate activism

Structuring climate activism

At the climate strike on 29 November 2019, we noticed posters demanding "system change." FFF Austria note on their homepage that "If these claims cannot be met in the current system, a system change is needed." (Fridays for Future Austria, 2019). How do the trainee teachers, students and activists participating in the project perceive this social-ecological transformation? Referring to the typology introduced by O'Brien *et al*. (2017), the measures they have taken and their requests show that the three approaches of climate change activism (reformist, oppositional, propositional) are present. The reformist character of these claims refers to measures within the existing economic system, which can also be determined in the students' group outputs. Activists try to live "as climate-consciously as possible" (Interview Anna, in the essay of Group 5). To stop buying new clothes (Interview Paula, in the photo report of Group 2), and the decision to eat no or less meat (Group 5) can be perceived as oppositional. The focus on plastic (waste) in the student outputs has a context: most of the trainee teachers involved in the project had already visited a plastic waste disposal facility as part of another university seminar (see Kowasch, 2022).

According to O'Brien *et al*. (2017) the line between the three approaches he identifies is sometimes very narrow – some claims can be rather considered as "reformist", others as "oppositional" or "propositional." Some of the students involved propose more radical measures. Group 1 for example not only referred to the claims of FFF Austria ("eco-social tax reform"), which can be seen as "reformist", but stated that economic growth and environmental protection are not compatible – referring to the concept of degrowth that can be considered as propositional (degrowth ideas are discussed extensively in this *Journal*, and see Kallis, 2017). Kallis explains that degrowth invites the abandonment of economistic thinking and to "construct viable alternatives to capitalism" (2017: 19). Degrowth supporters do not see the free market as a natural process but as constructed through governmental and other policies. It promotes redistribution of wealth and well-being instead of (economic) growth. We found similar support among students in a separate empirical study with 326 secondary school students in Graz (Kowasch *et al*., 2021) – of whom 172 had already participated in FFF strikes. Some of the students surveyed in that study wanted less greedy profit-seeking behavior, and/or a restructure of the economic system. Although such radical claims were less often proposed compared to reformist reductions in vehicle emissions, recycling, reducing (plastic) waste and the promotion of renewable energies, they show that the concept of degrowth exists in the students' minds.

In sum, social-ecological transformation measures proposed by the students of this study refer to the reformist, the oppositional and also the propositional approach. They can be contradictory in some ways. Living "as climate-consciously as possible" for example does not lead to a system change, but does express a "greener" consumption path.

Linking climate activism in Graz to ecopedagogy

Since ecopedagogy is perceived as a movement of critical educators, theorists, grassroots activists, and politically engaged citizens, it can potentially find new ground among climate youth activists and FFF participants. The four lessons to advance the ecopedagogy approach proposed by Toro (2016) can be found in the outputs from the climate activists in this study. To eat less meat, to buy local and regional food products and to reduce their own carbon footprint is a way to take better care of the Earth – potentially contributing to the development of an Earth consciousness. One student used the term "climate-consciously" for this behavior change (Interview Anna, in the essay of Group 5). If ecopedagogy is an approach to education and an urgent concern in a climate-constrained Europe, then a political ecology of education should consider how to promote it.

Toro (2016) also provides a paradigm of human welfare based on justice and equity, as a third lesson. This also elicited some student support. Group 1 for example explains that FFF demands that formal politics acts on principles of climate justice and does not burden future generations with intergenerational climate impacts and adaptation costs. Climate protection measures are seen as a chance for more positive development of the economy and leading to greater employment (Group 3). Group 4 referred to social justice by claiming that public space should be accessible for everyone, and equitably shared. This is consistent with the recognition and the procedural justice components of a radical environmental justice approach (Benjaminsen & Svarstad, 2021), constituting the different power relations of the various actors involved (e.g. of public spaces) and the marginalization of certain groups. For Reclus (quoted in Toro, 2016), social injustice based on hierarchical privileges and environmental damage are two sides of the same reality.

Some of the activists involved added animal justice to the notion of equity for humans and non-humans (e.g. Group 2). They argue that non-organic meat is cheap because animals are not bred and raised appropriately. According to the definition of animal justice, the activists challenge the ontological confrontation of human-nature, claimed by Toro (2016) in his first lesson. Societies should "maintain a more harmonious and respectful relationship to natural gifts and resources" (Toro, 2016: 2010), including non-humans. In this understanding, humans – as well as animals – are a constitutive part of the Earth, not external and independent entities.

Capitalism in a global economic system increases the need for transport and energy, and therefore leads to increasing greenhouse gas emissions since a transition to renewables is far from complete. In contrast, cooperation in a shared economy may lead to reduced energy consumption and less waste (Toro, 2016). The students involved also argue that excessive consumption is "harmful to the planet." (Interview Isabella, in the essay of Group 1). Second-hand shops, which are generally part of a more considerate and less profit-seeking, cooperative society as suggested by Toro (2016) are one essential topic for ecopedagogy in this socioeconomic context.

The re-use of old clothes can be considered as a step towards a Cradle to Cradle concept, promoting close natural cycles of industrial consumption products (McDonough & Braungart, 2002). Even if clothing cannot be endlessly used, second-hand purchases reduce waste, energy and carbon emissions. Supporting the slow fashion movement, there are a large number of second-hand shops in Graz (Austria). Group 4 for example noticed that the nine second-hand shops, established by Caritas, do not only offer second-hand clothes, but also used books, toys, dishes, etc. Second-hand shops and also foodsharing are ways to support environmental and social justice, because the aim is not to consume more natural resources, but to share consumption products so that more people can benefit from them. Both are strategies based on association rather than competition.

An obvious point to emerge from this small study is that these measures to reduce resource depletion and to act in a more sustainable way are oriented to the actions of a privileged position of European students in a relatively affluent member state. By contrast, David Meek deals with a vocational high school in a settlement of the Brazilian Landless Workers' Movement, developing an understanding of the political ecology of education in Brazil (Meek, 2015). That project encourages students to participate in the development of a regional agroecological science – agriculture and land use changes are highly impacted by climate change and teaching on sustainability issues is therefore more visceral and visible. High rates of poverty mean that sustainability actions may be more limited and differ from a developed-world study such as this. Isabella's comment (Interview in the essay of Group 1), that fast fashion is a problem but still practiced, reflects the easy availability of fashion in urban consumer society. Environmental justice thus takes on a different meaning and significance than in Meek's Brazilian study. We will discuss environmental justice and the responsibility principle a little further, linked to the results of the project in Graz.

Linking climate activism in Graz to distributive justice and the principle of responsibility

According to the responsibility principle of distributive justice (Walker, 2012; Schlosberg, 2004), climate activists lobby politicians to take action *now* and to implement measures to transform the mobility system and consumption behaviours. In the interviews conducted by Group 7, parents stated that politicians worldwide are now dealing with climate change. However, this is not enough for the young climate activists.

The claims at the demonstrations directly address political leaders who, they say, should take more responsibility for a climate-friendly future (Group 6). Group 3 for example mentions the introduction of eco-social taxation reform that includes a CO_2 tax. Companies and politicians thus should accept responsibility by implementing economic reforms and transition measures.

Although the FFF movement calls on political leaders to act, most of the students' propositions and ideas concern individual actions. The majority of students' outputs take a propositional approach, highlighting how individuals can combat climatic and global environmental change, e.g. eat less meat, buy regional and seasonal vegetables and fruit, take public transport, or buy package-free. The individualization of climate actions implies a division between people who act in an environmental-friendly way, and those who do not. As Palm *et al*. (2020) argue, such a division even decreases and hampers the individual willingness to change behavior. Following that argument, Resenberger (2017) identified a paradoxical coexistence of increasing environmental conscience and non-sustainable consumption behaviour. Isabella (Interview in the essay of Group 1) indeed points out that many young girls spend money on fast fashion, manufactured in conditions of environmental and social injustice (Takedomi Karlsson & Ramasar, 2020), and that such excessive consumption is often underexposed by climate activists in comparison to claims related to CO_2 emission reductions.

There is a predictable backlash against environmental claims pitched at individual behavior change, as many students expressed in this study. Despite consumer choices having some influence on environmental politics, scholars like Massey (2004) and others (e.g. Kowasch & Lippe, 2019) argue that the capacity of individuals to effect global changes is overestimated. There is a critical response to the idea that consumers are actually responsible for what is sold as consumer goods, rather than more powerful actors controlling economic conditions and the conditions of production and consumption (Ermann, 2006; Bruckner & Kowasch, 2018).

Climate activism and collaboration between trainee teachers and school students

Despite these broader arguments about the structural inequities found in mainstream conditions of production and consumption in Western countries, according to Schusler & Krasny (2015), environmental action, translated in this case through the collaboration project and the participation in the climate strike, encourages an engagement in scientific inquiry. For example, the output written by Group 3 addresses studies on microplastics by the marine biologist S.-J. Royer (University of Hawaii, Royer *et al*. 2018). The students learnt that microplastics release greenhouse gases such as methane as they break down. Such research-based learning and scientific inquiry allows the amassing of evidence to empower students to further participate in political debates, and to sustain democratically thinking (Lawy & Biesta, 2006).

As a contribution to the political ecologies of education, I suggest bringing climate activism into closer connection to schooling, as recommended by Reis (2020). Climate activism can lead or at least can contribute to an increasing Earth consciousness (Toro, 2016). The student protests in Austria have joined many others across the world to highlight intergenerational inequity in climate impacts already being experienced, and have had some influence on youth consumption patterns as well. Referring to Meek (2015), climate activism can mediate the relationship between the co-production of climate and environmental knowledge, and the social reproduction of an alternative society. In addition, and considering the main research question of this article, trainee teachers and secondary school students have shown that there are co-benefits from co-developing ideas for sustainability transition, but also by exchanging and co-creating knowledge. The participation in a climate strike is a common experience providing collaboration, cohesion and emotion (Kowasch *et al*., 2021; Jasper, 1998). Such affective emotion that "happens" at mass movements like climate strikes is important for intrinsic motivation. According to Ryan & Deci (2000, 69), people who express authentic motivations have more excitement and confidence compared to those who respond passively to everyday events, and passivity thwarts "positive developmental tendencies" in "social environments that are antagonistic toward these tendencies." The examples of student behavior in this article do demonstrate enhanced interest and motivation along these lines, although they are sometimes limited from a scientific perspective. They can be newly discovered and discussed by students of different ages, and those in the teaching professions.

8. Conclusion: a contribution to the political ecologies of education

The collaboration between FFF activists and trainee teachers and their joint participation in a climate strike in November 2019 was a form of climate activism, contributing to civic engagement and research-based learning. Youth cooperation can provide a necessary space for collective solutions and collective activism to emerge. Scientific studies related to the climate crisis and global environmental challenges, as well as possible solutions to them (mainstream and more radical in nature) were discussed with different degrees of complexity in the different components of student-trainee teacher interactions. This enabled environmental citizenship to build among secondary school students and trainee teachers, increasing their intrinsic motivation, and opening dialogue in a democratic classroom. The project participants addressed questions of environmental justice and the principle of responsibility, and these were discussed within the study groups. Moreover, the project and climate actions in general helped to build some scientific and social-scientific inquiry.

I conclude that different climate activism strategies can intermingle, and activists can pursue different approaches operating in parallel (Batterbury, 2018). Drawing on O'Brien *et al*.'s (2018) framework, FFF activists build upon reformist, oppositional and propositional approaches. Those approaches and solutions for social and environmental transitions, of the sort currently occupying European thinking on the greening of environmental performance and behaviors. They can be complementary, but they also show contradictions. While there are activists who advocate for (economic) system change, and this is starting at a young age as Greta Thunberg aptly illustrated, others want to work for socio-ecological transformation within existing power structures. A third group contests existing political measures such as ecological certification of food and eating meat. There were ontological differences between these student perspectives and worldviews, which further research could explore in more detail. Some refer to the high costs of sustainable consumption behaviour, while others claim the end of economic growth is required. Some activists go on to work on multiple and changing fronts over different stages of the life course.

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