UCLPRESS

Research article

Environmental literacy, sustainable education and posthumanist pedagogy: teaching the climate crisis in a global, transatlantic online setting

Laurenz Volkmann,[1,*] Hedwig Fraunhofer[2]

[1] Professor of Teaching English as a Foreign Language, Department of English and American Studies, Friedrich Schiller University, Jena, Germany
[2] Professor of French and German, Department of World Languages and Cultures, Georgia College and State University, Milledgeville, USA
* Correspondence: l.volk@uni-jena.de

How to cite

Peer review
This article has been peer-reviewed through the journal's standard double-blind peer review, where both the reviewers and authors are anonymised during review.

Copyright

Open access
International Journal of Development Education and Global Learning is a peer-reviewed open-access journal.

Abstract

In this article, we aim to contribute to the theoretical conceptualisation and praxis of development education and global learning by engaging with recent discussions in the areas of ecocriticism, ecological literacy and posthumanism. Employing a pedagogical approach that is learner-centred and participatory, and that prepares learners to question dominant, globally relevant social norms, development education and global learning empower learners to be active global citizens. In congruence with this approach, we discuss the transformative pedagogical strategies employed in an innovative transdisciplinary course on the climate crisis jointly offered online by two

institutions of higher learning in the US and Germany. We explore the philosophical and pedagogical stakes of this process-oriented, inquiry-based and immersive teaching intervention, and its logistical and organisational parameters, educational goals, course content and methodology, as well as some course specifics and impact. Adopting a critical pedagogical approach to climate change as a central global issue, our conceptualisation blends a focus on critical media skills (ecocriticism) with a posthumanist critique of dominant anthropocentric views of the more-than-human world. Centrally linking ontological, cultural and linguistic diversity in both curriculum design and pedagogy, this approach encourages learners to develop the transcultural skills needed to effect positive change on a local and global scale.

Open-ended approaches to complicated global issues

Development education and global learning challenge learners to critically engage with global realities such as inequality, poverty and sustainability by linking these realities with students' own experiences. Development education aims to foster global citizens who are able to effect positive change on both local and global scales. In recent years, the field has worked to decolonise teacher education and to develop new concepts for critical global citizenship education (Christoforatou, 2021). Heeding urgent calls 'to realign the curriculum to better address twenty-first-century needs, particularly with respect to sustainability and the environment' (Scoffham, 2018: 135), we conceptualised and implemented a tandem-taught transatlantic online course on the global issue of climate change. While the unequal consequences of climate change for geographically and socio-economically diverse groups of humans have been a central discussion point in our course, this article focuses on a pedagogy problematising also the ontological inequities and divisions that are at the root of the ecologically damaging practices contributing to climate change. In addition, we want to explore in greater depth what we mean by students' own contexts when we follow the call of development education to establish a link between learners' critical engagement with global issues, and their own experiences and contexts. By integrating the goals of development education or global education, in this way, with new developments in our respective academic backgrounds – posthumanist pedagogy and transculturality – we hope to create a 'catalyst for curriculum change' (Scoffham, 2018: 135).

First taught as a virtual exchange course during the pandemic summers of 2021 and 2022, and formally titled 'Climate Crisis: Teaching philosophy and fiction at the end of the world', the course has been experimental and exploratory in many different ways, including in terms of curriculum design and pedagogical approach. Initially taught in response to the challenges posed globally by Covid-19, the course aimed at providing immersion in another culture during a time when study abroad was no longer physically available to our students. But the course also offered us an opportunity to develop a critical pedagogy not limited to the time-specific context of the pandemic. The course proposes a conceptualisation of immersive learning that suggests ways to also address and resolve the post-pandemic apathy of our current students. In recent discussions in the US about ways to re-engage students in an 'age of "militant apathy"', educators have been calling for 'open-ended approach[es] to complicated problems', and for connecting the subjects taught 'to students' values, beliefs, and goals, investing them in the outcome and developing their sense of agency' (McMurtrie, 2023: 16). In other words, educators have been calling for exactly the link between learners' critical engagement with global issues and their personal experiences – a link that aims to prepare learners for active involvement in the world – that characterises development education or global learning.

This call for immersive learning is a call for an exploratory curriculum and for a methodology 'organized around problems, project-based, and interdisciplinary' (McMurtrie, 2023: 16). Instead of sticking to skills-based education, which, as one educator reports, makes students 'tune out', and instead of continuing the narrative of 'instrumental vocationalism', which is merely transactional, and

thus only extrinsically motivating, educators have been proposing 'a more holistic view of education that includes personal development and community well-being' (McMurtrie, 2023: 19). Our course conceptualises community and community well-being – that is, the positive outcomes and contributions that development education aims for in both local and global contexts – as extending not only across the Atlantic Ocean, but ultimately to the human and more-than-human community worldwide.

Focusing on climate change as a global issue that extends across national borders, as well as beyond the human sphere, our course aligns itself with critical forms of pedagogy and educational practices grounded in observation, exploration and a commitment to human and more-than-human relations not only within, but also beyond the (traditionally anthropocentrically structured) classroom (Freire, 1994; Kimmerer, 2013). Informed by Deleuzian process philosophy (Deleuze and Guattari, 1987) and physicist–philosopher Karen Barad (2007), we view education primarily as a dynamic relationality or entanglement of human and more-than-human participants that produces unexpected encounters and develops the kind of knowledge and affect that does not precede these encounters, but is rather co-created by or within them. Rather than imposing pre-existing, stable concepts on this educational practice, our discussion here focuses on the dynamic processes and quotidian practices involved.

As a result, the emphasis shifts from predictable learning outcomes and standardised curricula or syllabuses to open processes, student productions and inquiry-based experiential explorations and engagements with the human and more-than-human world that link the global issue of climate change to place-based, local contexts. There is ample evidence that favouring open-ended inquiry projects with a variety of learning pathways, rather than pre-planned and teacher-centred syllabuses, units and lessons, can engage students in more active ways of learning (see Barron and Darling-Hammond, 2010) and, ultimately, living.

In addition, we conceptualised the course as an interdisciplinary and transdisciplinary project, linking scientific approaches to climate change with posthumanist philosophy, anthropology (beyond the human), cultural studies, media, film and literary studies, second-language (English, French and Spanish) studies, teacher education and, centrally, ecocriticism and eco-pedagogy. Students came from a wide variety of disciplines.

While most of the students from the US institution were not planning to become teachers, but were majoring and minoring in diverse disciplines such as world languages and cultures, biology, nursing, marketing or creative writing, all the German students enrolled in the course as part of their preparation to become high school teachers of English. Participants were invited to join in transcultural discussions in online breakout groups within class sessions, as well as to collaborate in transatlantic teams beyond the classroom when preparing presentations using digital media and tools of their choice (such as in WhatsApp groups). Students then presented the results of their collaborative research during weekly synchronous sessions.

We understood the course as a transcultural rather than an intercultural exploration, in line with theories of transculturality (Welsch, 1999). Instead of presuming that it was mostly the different cultural backgrounds that informed our exchanges (the US and Germany, in this case), we deliberately took into account learners' multifaceted individual, communal and social contexts. As became clear, students from both institutions brought to the course diverse cultural and multilingual backgrounds, which allowed for the negotiation of many culturally divergent perspectives on an issue transcending national borders (namely, climate change).

Learners' contexts: the logistical challenges and quotidian practices of exploring global issues through different cultural and individual lenses

Establishing an effective and clear logistical and organisational framework for such a course proved to be essential from the outset. Our own reflections as instructors, as well as student feedback, suggest that the following basic parameters be considered (see also Belz and Müller-Hartmann, 2002; Volkmann, 2021).

Getting the course on (online) track

For a transatlantic encounter, finding a suitable time frame for the seminar sessions proved to be challenging. We had to consider not only the time difference of six hours, but also, more importantly, the

different semester and examination schedules and periods. As a result, some sessions at the beginning and end of the course took place without the group from the other university. These sessions were used to prepare students for the transcultural encounter (at the beginning of the course) and for feedback sessions (at the end of the course), or to cover module requirements germane to the different curricula and degree requirements.

By creating new, experimental formats of distance learning and teaching in that digital moment, we met the Covid-19 pandemic and the pedagogical need for remote emergency teaching with optimism, seeing this crisis as a learning and teaching opportunity (Volkmann, 2021). Zoom, our video-based platform, proved to be a reliable communication tool. The main file-sharing platform for the course was hosted by one university, with access given to students and instructors from both universities. In our synchronous class sessions, we also used digital tools for brainstorming or for other cooperative activities, such as Mentimeter and Instagram. Together with the digital tools used by the students during their teamwork or in preparation for presentations in class, the current digital infrastructure appears as a quantum leap compared to the digital conduits of communication employed in earlier binational projects (Bahlo et al., 2014; Belz and Müller-Hartmann, 2002).

Making students aware of institutional differences and restrictions

Prerequisites for course enrolment and participation, credit points, curricula, course designs, (active) participation requirements, assignment and testing requirements, as well as testing formats, can differ greatly between US and German educational institutions. Instructors need to ascertain that the formal requirements of their universities, departments and course modules are met. They may need flexible solutions and, in some cases, demand more from the participants than in a more traditionally taught course of the same discipline. For students, it seems essential to understand that requirements for members of the other group may differ and be less or more demanding for specific tasks. For example, students enrolled on the US side of this course, on the one hand, received grades for their presentations and active class participation, and had to finish the course with (individual or co-authored) writing or audiovisual projects on their interests relating to their majors or minors. German students, on the other hand, received no grades for their presentations or course participation, but had to pass a high-stakes oral examination (*Staatsexamen*) after the course. In this examination, the topic of the seminar comprised only half of the examination, the other half being another English as a foreign language issue of their choice. As we gleaned from student feedback, the differences between the demands of these two education systems need to be thoroughly explained. Indeed, students need to be reminded of these differences to avoid a sense of unfair distribution of workload.

Taking different motivations of students into account

The course was presented as an interdisciplinary liberal arts/humanities encounter. All class discussions and online interactions were in English, as course announcements made clear. Students, and world languages majors and minors in particular, were encouraged to read the assigned texts in the original languages whenever possible. Some texts were in Spanish or French (in the original) to include voices from the Global South, as well as to meet curricular expectations on the US side. Together with the topic, which drew students with diverse levels of environmental commitment at the start of the course, the broad palette of digital, transcultural and foreign language offerings of the course attracted a very heterogeneous group of participants. This heterogeneity was further accentuated by the fact that US participants ranged from rising sophomores (high-performing third-semester students) to graduating seniors, all pursuing (four-year) Bachelor of Arts or Bachelor of Science degrees in various disciplines, whereas German participants were, on average, in their sixth or seventh term of teacher education studies (English plus another major such as history, geography, biology or another foreign language). While the course syllabus covered the requirements and interests of both groups, instructors included tailor-made reading and project assignments for US and German students. Moreover, we encouraged various ways of coming together in social forms of collaboration, where participants had the chance to contact different partners from the other group with similar interests.

Fostering more transcultural communication

The instructors learned from interactions in class, students' feedback and formative evaluation that the phrase less is more with regard to input by instructors, texts under discussion and presentations by invited guest speakers as experts applied to this course. It seems advisable to plan for a sort of minimal curriculum for such a course, using only a select number of well-chosen articles and texts. As students reported, the discussion of texts with clear reflection tasks in digital 'breakout groups', as well as working on homework assignments in binational groups, proved to be most motivating and productive. These interactions provided fruitful lessons for honing social and soft skills, as well as transcultural competence with regard to negotiating the meaning or importance of texts and experiential projects, ways of doing research, and formats of presenting and cooperation in multicultural teams. In agreement with Belz and Müller-Hartmann (2002), we suggest that in future classes students be exposed to less input, enjoy a longer getting-to-know-each-other phase at the beginning and explore culture-specific perspectives on the issues under discussion. Along with language development – a prime motivational factor for some participants – transcultural learning could be highlighted as an important goal of binational collaboration.

In sum, it is crucial for instructors to encourage and supervise students' collaborative learning and help participants to explore the dynamic divergences and similarities between cultures, both human and more-than-human. Interestingly, in our course, students noted that individual differences, and differences of academic experience, had sometimes proven to be more significant and affected their transatlantic cooperations more than national differences. In any case, however, the online classroom became a third space (Kramsch, 1993) in which global human and more-than-human issues were probed from different individual and cultural perspectives.

From environmental literacy to teaching *natureculture*

It appears to be a general preconception that environmental topics, including the issue of climate change, should be taught in natural science disciplines, courses or classes. However, as Emmett and Nye (2017) correctly point out, it is one of the fundamental roles of the humanities to understand problems, to interpret and discuss them and to contribute to solutions. This interpretive and mediating role of the humanities also applies to the climate emergency.

Arguing from an ecocritical perspective, Skutnabb-Kangas et al. (2003: 9; our emphasis) explain: 'The links between language, culture and the environment suggest that *biological, cultural and linguistic diversity should be studied together*, as distinct but closely and necessarily related manifestations of the diversity of life on Earth.' Following this transdisciplinary link between the human and more-than-human world – that is, transversing the binary, hierarchical dichotomy between nature and culture that has marked Western modernity (with disastrous ecological results) – was one of the main tasks of our course.

The integrative approach of our course was deeply steeped in ecocritical theories and concepts. A subdiscipline of the environmental humanities, ecocriticism aims to illuminate the cultural and societal bases for human conceptualisations of the more-than-human world and related human practices, combining the critique of anthropocentrism with calls for sustainable development. While ecocriticism has thus been critical of anthropocentrism and human extractivist practices, it traditionally remains focused on human cultural (for example, literary or media) representations of the natural world (Zapf, 2022). However, in recent years, posthumanist approaches have enriched this discussion by proposing a view of relations between humans and agential more-than-human bodies and phenomena as mutually constitutive, deeply entangled, egalitarian and non-hierarchical (see, for example, Fraunhofer, 2020).

Similar shifts have been observed in pedagogy. In terms of learning goals, recent definitions in the field of pedagogy have shifted the focus from 'ecological pedagogy' or 'learning for sustainable development' to aspects of 'environmental literacy' (Küchler, 2016: 156; see also Bartosch, 2021). In line with the goals of development education, the North American Association for Environmental Education (NAAEE, 2019: 3) defines an environmentally literate person as 'someone who, both individually and together with others, makes informed decisions concerning the environment; is willing to act on these decisions to improve the wellbeing of other individuals, societies, and the global environment; and participates in civic life'. Environmental literacy can thus be integrated and taught in combination with critical skills, specifically critical media literacy. In such an integrated approach, an exemplary definition of critical skills – as the ability to call into question social and cultural norms, opinions and practices – then has to be modified to also, centrally, include matters of ecology and sustainability

(see Grigoryan and King, 2008; UNESCO, 2017). Put differently, honing critical skills and integrating problem-solving skills go hand in hand with the simultaneous application of problem-solving strategies to situations posing complex ecological problems and with the development of inclusive solutions for sustainable development.

Environmental literacy, as defined above, has certainly been one of the learning objectives of our course; at the same time, however, it can be argued that the term environment itself keeps intact the biopolitical, inside–outside division of the Western anthropocentric philosophical tradition (the environment being the surrounding – often idealised and thus ultimately devitalised – outside the human-centred, privileged inside). Similarly, making 'informed decisions concerning the environment' (NAAEE, 2019: 3), or improving the well-being of (human or nonhuman) others, while laudable as goals in practical terms, retain a conceptual partition between the (active, human) subject and the (passive, nonhuman) objects to be acted upon. In the definition by NAAEE (2019; cited above), life is anthropocentrically defined exclusively as civic (in the sense of human) life. In other words, with the verbiage employed in current definitions of environmental literacy, we have not yet reached a truly posthumanist educational practice. We are still only talking about the more-than-human world, applying our human problem-solving skills to ecological problems, instead of conceptualising the role of humans as part of an ecology or taking more-than-human beings seriously as co-equal partners. By contrast, consider, for instance, the subtitle of the Indigenous activist and botanist's Robin Wall Kimmerer's (2013) groundbreaking book, *Braiding Sweetgrass: Indigenous wisdom, scientific knowledge, and the teachings of plants*. A truly critical, democratic and posthumanist pedagogy distributes agency in and beyond the classroom, not only among human instructors and students, but also across species lines.

Importantly, our binational and cross-ontological project aimed at the development of not only foreign-language skills, but also of new dimensions of what has traditionally been known as intercultural competence. In this endeavour, we start with Michael Byram's (1997) influential concept of intercultural competence as comprising attitudes of curiosity and openness, skills of interpreting and relating, knowledge of social groups and their products and practices and skills of discovery and interaction, while newly defining social as inclusive of the social lives of more-than-human beings. We intend to move beyond recent discussions in the disciplines of transculturality and foreign-language learning by aiming to transcend images of cultures as fixed, easily identifiable entities and instead stress elements of cultural hybridity and intermingling in figurations of transcultural competence (Welsch, 1999; for a discussion, see Braselmann et al., 2021). Crucially, however, we see such cultural hybridity in human and more-than-human terms.

As a new, added dimension of conceptualisations of inter- or transcultural competence, we thus suggest a new perspective: a kind of transgressive competence within the realm of *natureculture* (Haraway, 2012), that is, in the vibrant, productive entanglement of human and more-than-human cultures. As Haraway (2012) suggests, a radical closing of the ontological gap between nature and culture also requires a new conceptualisation of the human as part of the natureculture continuum. Specifically, in her essay 'The companion species manifesto: Dogs, people, and significant otherness', Haraway (2012: 6) describes biological cross-influences between humans and dogs to stress that 'beings constitute each other', and that they 'don't pre-exist their relatings'. Inspired by Haraway (2012) and other posthumanist perspectives such as Barad (2007), our teaching–learning project aims to transverse the nature–culture split that has marked Western philosophy and (even ecologically oriented) education. This approach poses the challenge of establishing an affirmative eco-pedagogy that respects cultural and ontological differences within the natureculture continuum without flattening them out, while at the same time avoiding conventional binary or hierarchical distributions, fixed classifications and exploitations.

Transcultural courses provide ideal learning scenarios for both instructors and students to reflect on their own cultural contexts and preconditioning, to understand the other participants' often culturally conditioned perspectives and to negotiate different views, linguistic codes and cultural narratives. Our course aimed specifically at exploring culturally divergent conceptualisations of nature and the ontological role of humans. Different human learners engage with the more-than-human world through different individual and cultural lenses. These diverse lenses shape learners' different notions of humans' ontological position in the world and influence their behaviour towards more-than-human phenomena. The integration of a posthumanist perspective in language and cultural learning allows reflection on culture-inflected ways of research, understanding and learning. The development of critical thinking and reflective competencies can, then, also extend to culturally divergent interactions with the more-than-human world. Ultimately, among class participants, a new understanding of inter- or

transcultural competence may evolve: as the ability to engage not only with different human, but also with more-than-human, cultures, transversing traditional conceptualisations of cultures as containers and as uniquely and exclusively human (for a similar approach, see Bartosch, 2020).

Ecocriticism: course content, media in focus and methodological issues

Devising the course syllabus, we planned to enable students to choose from a broad spectrum of media and texts, ranging from television commercials, pop culture artefacts such as video clips, documentaries and feature films to literary genres such as short stories, novels, a graphic novel and a play (partly as trailers or excerpts). While there was a minimal core of set texts (for example, one film was viewed in an extra online session), students more interested in pedagogical issues could, for example, read and then discuss as experts a young adult fiction text, while students with a focus on literary studies were given the choice of reading a longer philosophical novel.

To encourage active participation and the transnational exchange of ideas, students were frequently invited to discuss pertinent questions about a text or medium in groups. Additionally, students were given two rather open assignments that required them to work in binational groups of three or four students. For their first assignment, learners were asked to prepare and deliver a presentation on a shorter medium, such as a pop song, poem or commercial of their choice, with an ecological agenda or focus. For their second assignment, students were invited to focus, again in binational groups, on a film, novel, graphic novel or longer text of their choice. If needed, the instructors provided suggestions for relevant materials. Prior to the date of the presentation, students uploaded their PowerPoint or Prezi presentations for feedback from both instructors on language issues, referencing of sources, effective audiovisual presentation and content. In general, the students' cooperation in binational groups proved to be effective, as the individual participants in these heterogeneous combinations usually made an effort to cooperate and deliver a coherent presentation. Students also reported that clear instructions on composition and length of presentations, including rubrics, were helpful.

Following a spiral curriculum, and sequencing from simpler, shorter texts to more complex and demanding ones, and from more teacher and theoretical input at the outset to increased active student involvement, both instructors collaboratively designed the syllabus and put it into practice with small adjustments during the semester. A special and unusual feature of the course was the inclusion of several guest speakers, all renowned experts in the natural sciences, cultural and literary ecocriticism, eco-pedagogy or ecological literacy. The input provided by experts from different disciplines, and the different perspectives and presentation modes they brought to the sessions, greatly contributed to the appeal of the seminar.

In line with most environmental literacy models (Deetjen and Ludwig, 2021; Küchler, 2016), we encouraged participants to observe and discuss different cultural practices, perspectives and ways to engage with the more-than-human world. Examining culture-specific mappings of nature in media presentations and narratives can foster students' understanding of both divergences and commonalities between their own culture and other cultures. Students can also gain insights into how different cultural narratives, framing mechanisms and representations inspire different attitudes and behaviours when engaging with the more-than-human world.

Starting with easily accessible audiovisual texts such as commercials, the course progressed to cover examples of documentaries, feature films and, finally, literary texts, again beginning with examples of short fictions and continuing with (occasionally, excerpts from) novels, graphic novels and, finally, a play (students read the text and/or watched a performance on YouTube). The instructors, both scholars of literary and cultural studies, aligned their course philosophy with hermeneutical views of fiction as 'a valuable ethics laboratory where complex scenarios and issues are dramatized, allowing its readers to extrapolate from those fictional scenarios and consider the consequences of those actions in ethical terms' (Ferreira, 2019: 252–3). Importantly, the question of ethics applies not only to interactions between diverse groups of human populations, but also to human entanglements with the more-than-human world.

Moreover, literary texts were also chosen with an eye on how they establish, on the one hand, a dialogue with current scientific, sociopolitical and cultural aspects of the climate crisis, and, on the other, how they foster reader engagement and attention, negotiation of meaning and critical thinking. Genres

under consideration were science fiction and, specifically, dystopian texts. Our students in teacher training programmes suggested a focus on young adult fiction, such as the novel *The Carbon Diaries 2015* (Lloyd, 2008) in teaching 'units that explore agency at the individual and social level' (Hill, 2012: 102). The students argued that such novels are ripe with current political themes and offer safe confines to wrestle with these themes. The students can work on 'sense-making activities' (Lazar, 1990: 205) that help them create meaning out of the reading material. Teachers follow the principle of the emotional funnel, first taking the students' emotional response to a text seriously, then probing more deeply into questions of why a certain (literary) text evokes such responses (Braselmann et al., 2021). Various questions could be considered, for example:

(1)   How do you feel about this text with regard to its engagement with the climate crisis?
(2)   What are the (literary, fictional, dramatic/theatrical, film) devices used to shape and form reactions to the text?
(3)   What distinguishes the text type or medium from other text types or media with regard to how it deals with and communicates the climate emergency?

Introducing posthumanism

While the ecocritical focus of the class was designed to help students develop critical media skills, specifically when it comes to (human) representations of the more-than-human world, one of the main objectives of the course was also to make students understand the limits and dangers of an anthropocentric world view. To further this objective, the instructors chose to use a simple interactive activity at the beginning of the course. Following students' input, they typed key terms that form part of binary oppositions into an online document (for example, light/dark, White/non-White, rich/poor, straight/gay). They asked students to reflect on how such opposites are culturally constructed as naturally given and how these dichotomies frequently imply clear-cut boundaries between both sides, as well as a hierarchical order (see Cixous, 1981). The goal of this activity was to encourage students to question and reflect on these distributions.

The central binary discussed and problematised was the ontological division between culture (defined as exclusively human) and more-than-human nature. Students understood that an anthropocentric world view is not pre-given by the structure of the universe, but rather devised by humans to serve their own extractivist, narcissistic interests. This individualistic world view is predominantly found in Western cultures, as Kimmerer (2013: 9) expresses succinctly: 'In the Western tradition there is a recognized hierarchy of beings, with, of course, the human being on top – the pinnacle of evolution, the darling of Creation – and the plants at the bottom.'

The binaries human/nonhuman and culture/nature are the ontological structure on which human exceptionalism is based. There are, of course, also intersections between other negativised/deprivileged or privileged concepts. As literary and cultural scholars have pointed out, widely accepted binary dichotomies such as (hu)man versus nature in fact rest on White, male, heterosexual, Western/colonialist conceptualisations of nature (see Emmett and Nye, 2017). In line with the stakes of feminist, critical race and queer studies, as well as with posthumanist philosophy, one of the central goals of our course was, again, to problematise and transverse these sociocultural and ontological binary oppositions.

Any academic course focusing on a selection of literary texts and/or other media should of necessity be informed by critical theories pertinent to the course content, agenda and perspective. Since our course aimed to cover a broad range of texts and media, and since students came to the course with academically very heterogeneous backgrounds, we decided to provide students with only a select number of theoretical pieces on the issues of ecocriticism and eco-pedagogy. In our case, a relatively short reading list of theoretical texts consisted of a text covering the historical evolution of ecocriticism, outlining some relevant fields of inquiry (Zapf, 2012), an introduction to recent fields in the humanities that could be seen through the theoretical lens of ecocriticism (Emmett and Nye, 2017) and two thematically very different introductions to key ecological matters in pedagogical contexts (Bartosch and Grimm, 2014; Küchler, 2016). These key articles or chapters were discussed during the opening class sessions attended by both groups of students. For interested students, readings on recent posthumanist trends in ecocriticism were provided on the internet platform. More challenging and philosophically complex posthumanist debates were integrated into class discussions (as exemplified above) and into a series of experiential, place-based assignments (Kimmerer, 2013; Page, 2020) where students intra-acted (Barad,

2007) with more-than-human individuals or landscapes of their choice and reflected on these intra-actions or cross-species conversations in writing and/or in audiovisual projects (as discussed in more detail in Fraunhofer and Volkmann). In times of climate crisis, the contemporary French philosopher Baptiste Morizot (2022: 227; emphasis in the original) writes:

> More than appealing to the love of nature, or brandishing the fear of the Apocalypse, it seems to me that one way, better adjusted to the challenges of the time, amounts to trying out many approaches, practices, types of language, processes, devices, and experiences that can make us *feel and live* from the point of view of interdependences. Make us feel and live as a living creature in the living world, also caught in the weft, sharing ascents and ways of being alive, a common destiny, and a mutual vulnerability.

Trying out many different approaches (textual/ecocritical as well as experiential/posthumanist), processes and types of language (human as well as more-than-human), our class created a weave of interdependences in Morizot's (2022) sense, allowing us to feel and live from many diverse perspectives.

Group projects: the central concept of greenwashing

Employing a pedagogical approach that is learner-centred and participatory, and that prepares learners to question dominant, globally relevant social norms, development education and global learning empower learners to be active global citizens (Bourn, 2021). Our course blended a focus on critical media skills (ecocriticism) with a posthumanist critique of dominant anthropocentric views of the more-than-human world, while also encouraging learners to develop the transcultural skills needed to effect positive change on a local and global scale.

From the outset, our course combined theoretical input and related discussions with the task of forming teams for applied assignments of relevance to learners' quotidian practices. From our discussions, and from the students' selection of group projects, it soon became clear that students were eager to explore the concept of greenwashing. Students subsequently worked together in binational teams to discover and analyse the commercial uses of this promotional strategy.

We used two conceptual models from brand marketing to discuss how advertising creates consumer interest in buying a product because it appears to be ecologically safe. First, learners can use the AIDA (attention–interest–desire–action) model to understand how commercials use persuasive techniques for advertising allegedly sustainable products. A second, similar model was also used in class: the presumed relationship model (Chen et al., 2020). Like the AIDA model, it is a phase model – from perceived deception to attitude towards ad to purchase intention. In other words, both models describe how commercials create a desire to purchase a product that, in the case of greenwashing, seems to fit neatly into socially/ethically acceptable and desirable consumer choices. For example, a survey by Business Wire (2021) found that 78 per cent of US consumers are more likely to purchase a product that is clearly labelled as environmentally friendly. At the same time, however, the created images often cover up, and thus greenwash, environmentally detrimental, non-sustainable practices in production and the choice of materials. Developing critical environmental literacy, students can reflect critically on the selection of linguistic, auditory and visual means to create such images. In line with relevant critical models (Küchler, 2016), we asked students to answer guiding questions such as: Why do companies use persuasive techniques to promote sustainable products? How can these techniques be described? What makes them misleading or deceptive? What makes greenwashing appealing to the customer? The students' research clearly demonstrated that ecological promises and ecological reality often do not tally. The products and commercials under scrutiny ranged from Starbucks to Volkswagen, and from fashion brands to brands of bottled water. As students pointed out in their presentations, greenwashing is part of a host of similar techniques, such as bluewashing, pinkwashing and humanewashing, and other persuasive techniques that suggest that the commodities advertised have been produced in congruence with an ethics based on progressive values.

Films and their learning potentials

From commercial artefacts, the course turned to film. We intended to focus on one documentary and one feature film. Of course, there is a wide choice of ecodocumentaries, including classics such as

An Inconvenient Truth (Guggenheim, 2006) and the sequel, *An Inconvenient Sequel: Truth to power* (Cohen and Shenk, 2017). There is another (although, again, older) documentary by the French director Yann-Arthus Bertrand (2009), *Home*, which would suit our course focus on the natureculture continuum, since it emphasises the idea that everything on planet Earth is linked. A less-known classic, *Koyaanisqatsi* (Reggio, 1982), was also considered as an option, as were recent ecodocumentaries on Netflix, such as *Seaspiracy* (Tabrizi, 2021). There are also *Climate Change: The facts* (Davies, 2019), with David Attenborough and Greta Thunberg, and the documentary *Endgame 2050* (Pineda Ochoa, 2020). The course participants decided to watch *David Attenborough: A life on our planet* (Hughes, 2020) and *Seaspiracy*, partly to detect how visuals, the narrative voice of the protagonist and the content of the documentary co-function in an impressive manner. Regarding the choice of feature films, the instructors considered suggestions by colleagues with expertise in film studies. In class, we encouraged students to determine and discuss the differences between disaster movies or dystopian action thrillers, such as *The Day After Tomorrow* (Emmerich, 2004), *The Survivalist* (Fingleton, 2015) and *Deepwater Horizon* (Berg, 2016), and ecomovies, such as *Beasts of the Southern Wild* (Zeitlin, 2012). We also considered *The Simpsons Movie* (Silverman, 2007) as a possible set text for our class, as a satire of a disaster movie in which the townspeople of Springfield's efforts to combat pollution cannot prevent its ultimate doom. Our class also discussed film trailers, specifically with regard to how the trailers of thrillers follow a certain pre-established pattern. We finally decided to use *Beasts of the Southern Wild* for our class. While it could be viewed as a disaster film, it is mostly a reality-based psychological, racial and socio-economic drama set in motion by the climate crisis and thematising the unequal effects of the crisis on impoverished *sacrifice zones* (for a more detailed analysis of the film, see Fraunhofer and Volkmann).

Discussions of the films selected – both documentaries and feature films – circled around the question of differences in genre between a film that claims to present factual reality (documentary) and one that presents an imagined reality (feature film). Valuable input by a guest presenter asked students to consider how they viewed the films under discussion. Students were invited to ponder, in particular, the issue of how documentaries work, given the 'implicit, unspoken agreement between the text's producer(s) and the discursive community to view a film as *nonfiction*' (Platinga, 1997: 40, emphasis in the original). In the end, however, the distinction between feature films and documentaries is anything but clear:

> While most viewers feel that they simply 'know' when they are watching a documentary rather than a fiction film, it has been surprisingly difficult for critics and theorists to come up with a rigid definition that would clearly separate the two. Distinctions must nevertheless be made, since there is broad agreement among film scholars that audiences *do* respond differently to fiction and documentary. (Von Mossner, 2014: 41)

As guest speaker Ricardo Römhild convincingly argued, the distinction between feature films and documentaries may have more to do with viewer expectations and reception than with any actual clear-cut differences between the two genres of film.

Fiction(s) and their appeal

Moving from film presentations of the climate crisis to literary fiction, the class discussed a central problem faced by liberal arts disciplines at universities and secondary schools: how to tackle the prevalent conception that environmental topics belong in the hard sciences and natural science classes. Our class received valuable input on this point from US palaeobotanist Melanie DeVore. Presenting hard facts about global warming, DeVore encouraged our liberal arts students on both sides of the Atlantic to debate climate change as a global issue and to bring the multimedia engagements with it to the public, including, in the case of the German students majoring in education, to their own students. While 'the scales on which climate change acts make it notoriously difficult to represent in artistic and cultural works' (Callaway, 2018: 1; see also Fraunhofer, 2021), film and fiction often have special emotional and identificatory appeal, allowing us to '*feel and live* from the point of interdependences' (Morizot, 2022: 227; emphasis in the original).

The subsequent part of the course consequently appealed to the students' interest in reading and discussing literary fiction, particularly in the area of science fiction and eco-utopian or eco-dystopian fiction. Here, the ecologically committed students in particular saw an opportunity to connect their own

lives to questions of language and literature. As dystopian fiction tends to engage with current issues, extrapolating current concerns to create fictional worlds as dark mirrors of the present, it ultimately asks the reader to reflect on whether or how we can avoid future disasters. Such speculation about the future thus poses the question of what individuals can do to make the world a better place (Claeys, 2017) – the question also centrally posed by development education and global learning.

Based on suggestions by expert colleagues, we again put only a few set literary texts on the course syllabus, inviting participants to discover more literary texts and to present them in class. Binational groups then presented on various literary genres, as described below. As a first, shorter reading assignment for all students, we chose the British writer China Miéville's (2011) fantasy/science-fiction narrative 'Covehithe', which was published in *The Guardian* and is easily accessible online. In this short story, defunct oil rigs rise up in the Atlantic like monstrous revenants. In this way, Miéville (2011) employs a metaphor purveying a key message of ecological texts: the ecological damage that humans wreak will come back to haunt us. Linking the focus on critical skills with the posthumanist ethos of the class, this text allowed us to problematise the question of metaphors. Our concern here (as thematised in the class discussion) was that, depending on the text in question, the use of metaphors might not be truly post-anthropocentric as a strategy, since metaphors only employ posthuman images to address questions that are ultimately still human-centred. The question of metaphors is a point where the Deleuzian tradition (for example, Deleuze and Guattari, 1987) and Kimmerer (2013) (who finds them useful) differ.

In addition, the class also read excerpts from two novels. The multimodal young adult fiction *The Carbon Diaries 2015* (Lloyd, 2008) proved to be easily digestible fare, with its series of environmental crises hitting the familiar scene of Great Britain, and, specifically, London. As a soft apocalypse featuring a terrified teenage protagonist trying to survive in the midst of a devastating deluge, the story appeals to high school students, yet it is arguably also contrived and already dated. While *The Carbon Diaries 2015* chronicles the effects of the climate crisis and scarcity on everyday life by means of a fictional diary, David Mitchell's (2014) *The Bone Clocks* centres on the climate emergency in a more sophisticated and philosophical manner. It draws attention to our human lack of attention to a more-than-human crisis (climate change) that only looms in the background of a more immediately engaging, anthropocentric story and is neglected for too long, until the apocalyptic end can no longer be prevented.

As an example of ecodrama, the class discussed the Australian farce *The Turquoise Elephant* (Carleton, 2016), a play in the (arguably anthropocentric) realist-naturalist tradition that contains some influences from absurd theatre. The black comedy, set in Sydney, enacts over-the-top reactions to a looming environmental disaster. It invites students to identify elements specific to performance, stage-and-audience interaction and sensory immersion and immediacy germane to drama and theatre productions. In the second iteration of our course, a group of students presented on Shonni Enelow's dramaturgically innovative play, *Carla and Lewis*, in the context of Una Chaudhuri and Enelow's Ecocide Project (Chaudhuri and Enelow, 2013). Further exploring different (more and less anthropocentric) ways of representation (in theatre and in painting), the US participants also used the final section of the course to discuss Argentinian writer César Bertrand's (2006) short novel, *An Episode in the Life of a Landscape Painter*. Moreover, Timothy Morton's (2010) groundbreaking theoretical essay 'Queer ecology' was offered as an optional reading choice to round out this segment.

Additional student presentations focused on the graphic novel *Climate Changed: A personal journey through the science*, by Philippe Squarzoni (2014; the French original, Saison brune, 2012, may also be used in class), which integrates a personal, autobiographical narrative with documentary-style explanations of the effects of global warming. Given its publication date a decade ago, the non-fictional (and non-comical) *bande dessinée* calls for a comparison between the data known to us in 2012 or 2014 and present-day concerns. Such a historical comparison also proves effective for the discussion of one of the classics of climate fiction, J.G. Ballard's (1962) *The Drowned World*, which thematises the effects of the continued warming of the atmosphere and the melting of the polar icecaps. Inspired by class discussions on posthumanist or post-anthropocentric approaches, a group of students decided to focus their class presentation on Ballard's (1962) novel on the topic of sand. Additional perspectives were introduced by students presenting animal fables such as 'Reynard the Fox', under the heading of 'Anthropocentrism in Mythology: Animal agency through adoption of human characteristics'. Students here engaged with anthropocentrism as a human-centred point of view that frequently sees humans as the gatekeepers of morality. Another group presentation discussed intersections of gender, class and environmental issues in various adaptations of Margaret Atwood's (1985) dystopian novel, *The Handmaid's Tale*. Here, students

also had the opportunity to compare media differences between the original novel, the film adaptation (Schlöndorff, 1990) and the television series (Miller, 2017–present). A student group presentation of the multimodal book *Climate Change in Simple Spanish* by Olly Richards (2021) added an additional linguistic perspective. Using examples from the book, students demonstrated how this easy reader makes difficult factual information comprehensible for readers of all ages, while providing practical ideas for tackling current issues and bringing about change. Based on conversations between the three main characters, the book explains how climate change affects humans, plants and animals in different areas of the world. Covering countries such as China and Brazil, the book again provided a much-needed non-Western/non-Northern perspective.

Impact of the course and critical feedback

In addition to the usual formal course evaluations held at both participating universities, the course instructors interviewed a select number of students. Moreover, two PhD candidates conducted in-depth online interviews using guided questionnaires with open and semi-open questions (see Dörnyei, 2007). As formal course evaluations and interviews confirmed, the German students particularly enjoyed elements of the transcultural encounter and also saw the course, including the choice of texts and modelling of teaching methods, as good preparation for their future careers as English-language teachers. Hailing from very diverse disciplines, the US students demonstrated in their final projects their ability to relate the material to their specific subjects, creating a basis for effecting the kind of positive change for which development education calls. An Ethiopian student enrolled on the US side, with a major in business marketing and a minor in French, felt inspired to rethink her future career as a fashion designer, learning how fast fashion results in low-quality clothing. In an interview, she stated that she wanted: 'to make clothes with high-quality, sustainable fabrics that are environmentally friendly. Organic fabrics, like cotton, linen, hemp and bamboo are biodegradable and discharge fewer chemicals into water systems. These fabrics last longer, but they're also more expensive' (Frontpage, 2021). In a similar vein, a second-year nursing major stated that the climate subject complemented his future career as a nurse: 'The course was like a breath of fresh air. Ultimately, the dangers of climate change all tie into public health' (Frontpage, 2021). Another student summed up what most participants felt after the course: 'I knew about these [environmental] problems, but I never knew how bad it was and how these things can potentially affect the future' (Frontpage, 2021).

Interviews conducted by PhD candidates after the summer 2022 course revealed a number of suggestions for adapting course designs in the future, as well as for meeting challenges inherent in transnational online courses with a focus on ecological issues. Four main areas appear most pertinent here:

(1) As had already become palpable to the instructors during the course, the educational goal of furthering both critical media literacy and empathetic responses questioning anthropocentric stances remains a tenacious problem. For instance, responding affectively to a documentary such as *Seaspiracy* (Tabrizi, 2021), with its clear ecological message, while simultaneously being able to critically analyse and understand its manipulative film techniques, created severe emotional and cognitive dissonances. It appears that aiming at both cognitive and affective goals may lead to discrepant results. This dilemma could be interpreted with regard to the problem of apparently insurmountable and jarring educational antinomies (Helsper, 2010), that is, seemingly incompatible teaching/learning objectives. It can also be argued, however, that the ability to tolerate such ambiguity, and to transverse or blur the duality between cognition and emotion, can be considered a learning objective in itself. In the case at hand, students can learn that a cognitive ability – here, the ability to identify and critique the effective or even manipulative film techniques employed – can be held at the same time, in abeyance, as the affect created (the identification with the suffering of more-than-human beings and entities). Critical media skills, and an affective witnessing with the more-than-human world, can then be seen as compatible learning objectives, even if participants do not always draw identical conclusions concerning the impact of specific readings or viewings on their own daily practices.

(2) In interviews, students pointed to the effective and productive task of comparing how global brands such as IKEA or H&M project different and culturally inflected images of their company and products. In binational groups, students felt inspired to interpret the culturally different

implications projected by the respective internet presence or advertisements in the two countries. Culturally different modes of greenwashing, as well as differing focuses of product promotion, were contrasted – which was seen as an eye-opening intercultural experience.

(3)   German students stressed the importance of being exposed, sometimes in a rather perturbing way, to different and unusual perspectives on research or working with source materials and cultural artefacts. Used to a rather analytical and academic approach, they had to learn about more creative, even artistic and frequently personal takes on the tasks completed in cooperation with their US peers. Using, for example, an ecodrama as an inspiration for creating one's own paintings and a small art installation was something unheard of for all German students, who felt inspired to consider similar non-traditional approaches in their future profession as teachers.

(4)   All interviewed students described different dimensions of their learning experience. First, the digital frame of an online course taught in different time zones, with participants from different disciplines, was at first viewed as a distantiating transcultural experience. Yet students eventually discerned this experience as a mere background, and not as an all-determining force in the learning process. Second, joint online sessions with binational instructors and students were, predictably, experienced differently from merely nationally taught online classes. Third, group discussions in breakout sessions were seen as distinctly productive cross-cultural experiences. Most important of all, group work in binational teams appeared to the students interviewed as the most palpable and valuable transcultural encounter. Simply put, cooperating in WhatsApp groups and/or using Google Docs and similar digital tools, as well as presenting project work in teams, stood out as the most favoured and effective learning experience. We, as instructors, interpret these insights as a strong suggestion to open up even more spaces of self-determination in collaborative learning-focused scenarios in future iterations of the course.

The participants' engaged feedback showed that the course had gone beyond mere skill development and had provided students with an immersive opportunity to ask big questions and actively co-create meaning. Focusing on ecological issues, the class had worked towards 'a more equitable, sustainable, and ecologically aware culture and society of the future' (Zapf, 2022: 15). As students related, the course had avoided what guest presenter Uwe Küchler had exposed as disaster pedagogy, or doom-gulp-gloom pedagogy. The class had refrained from both an alarmist, moralistic approach and a human-centred belief in technological fixes. Most importantly, the course had provided an experience in global learning that encouraged participants to venture beyond both human political borders and anthropocentric philosophical and pedagogical frameworks. In line with the goals of development education and global learning, all students finished the course with the understanding that the climate crisis is a key global issue calling for action-oriented transdisciplinary cooperation in the classroom and, crucially, beyond.

Declarations and conflicts of interest

Research ethics statement

The authors conducted the research reported in this article in accordance with Georgia College & State University standards.

Consent for publication statement

The authors declare that research participants' informed consent to publication of findings – including photos, videos and any personal or identifiable information – was secured prior to publication.

Conflicts of interest statement

The authors declare no conflicts of interest with this work. All efforts to sufficiently anonymise the authors during peer review of this article have been made. The authors declare no further conflicts with this article.

References

Atwood, M. (1985) *The Handmaid's Tale*. Toronto: McClelland and Stewart.

Bahlo, N., Paul, C., Topaj, N. and Steckbauer, D. (2014) 'Videokonferenzen im DaF-Bereich? – Überlegungen zu Möglichkeiten und Grenzen am Beispiel "Skype in the classroom"' [Video conferences in the DaF area? Considering the possibilities and limitations using the example of "Skype in the classroom"]. *Informationen Deutsch als Fremdsprache*, 41 (1), 55–69. [CrossRef]

Ballard, J.G. (1962) *The Drowned World*. London: Gollancz.

Barad, K. (2007) *Meeting the Universe Halfway: Quantum physics and the entanglement of matter and meaning*. Durham, NC: Duke University Press.

Barron, B. and Darling-Hammond, L. (2010) 'Prospects and challenges for inquiry-based approaches to learning'. In H. Dumont, D. Istance and F. Benavides (eds), *The Nature of Learning: Using research to inspire practice*. Paris: Organisation for Economic Co-operation and Development, 199–226.

Bartosch, R. (2020) 'Literature pedagogy and the Anthropocene'. In G. Dürbeck and P. Hüpkes, (eds), *The Anthropocenic Turn: The interplay between disciplinary and interdisciplinary responses to a new age*. London: Routledge, 113–29.

Bartosch, R. (ed.) (2021) *Cultivating Sustainability in Language and Literature Pedagogy: Steps to an educational ecology*. London: Routledge.

Bartosch, R. and Grimm, S. (2014) 'Teaching environments: How "green" can – and should – a classroom be?'. In R. Bartosch and M. Barber (eds), *Teaching Environments: Ecocritical encounters*. Frankfurt am Main: Peter Lang, 13–22.

Belz, J.A. and Müller-Hartmann, A. (2002) 'Deutsch-amerikanische Telekollaboration im Fremdsprachenunterricht – Lernende im Kreuzfeuer der institutionellen Zwänge' [German–American telecollaboration in foreign language teaching – Learners in the crossfire of institutional constraints]. *Die Unterrichtspraxis/Teaching German*, 35 (1), 68–78. [CrossRef]

Berg, P. (Director) (2016) *Deepwater Horizon* [film]. Santa Monica, CA: Lionsgate.

Bertrand, Y.-A. (Director) (2009) *Home* [film]. Paris: EuropaCorp.

Bourn, D. (2021) 'Pedagogy of hope: Global learning and the future of education'. *International Journal of Development Education and Global Learning*, 13 (2), 65–78. [CrossRef]

Braselmann, S., Glas, K. and Volkmann, L. (2021) 'Ecology, cultural awareness, anti-racism and critical thinking: Integrating multiple perspectives in foreign language teaching'. *Ecozon@: European journal of literature, culture and environment*, 12 (1), 8–24. [CrossRef]

Business Wire. (2021) 'GreenPrint survey finds consumers want to buy eco-friendly products, but don't know how to identify them'. March 22. Accessed 2 February 2022. https://www.businesswire.com/news/home/20210322005061/en/GreenPrint-Survey-Finds-Consumers-Want-to-Buy-Eco-Friendly-Products-but-Don%25E2%2580%2599t-Know-How-to-Identify-Them.

Byram, M. (1997) *Teaching and Assessing Intercultural Communicative Competence*. Clevedon: Multilingual Matters.

Callaway, E. (2018) 'Seeing what's right in front of us: *The Bone Clocks*, climate change, and human attention'. *Humanities*, 7 (1), 11. [CrossRef]

Carleton, S. (2016) *The Turquoise Elephant*. Strawberry Hills: Currency Press.

Chaudhuri, U. and Enelow, S. (2013) *Research Theatre, Climate Change, and the Ecocide Project*. London: Palgrave Macmillan.

Chen, Y.-S., Huang, A.-F., Wang, T.-Y. and Chen, Y.-R. (2020) 'Greenwash and green purchase behaviour: The mediation of green brand image and green brand loyalty'. *Total Quality Management & Business Excellence*, 31 (1–2), 194–209. [CrossRef]

Christoforatou, E. (2021) 'Teacher education for sustainable development within national frameworks: Squaring the circle from a German perspective'. *International Journal of Development Education and Global Learning*, 13 (1), 1–15. [CrossRef]

Cixous, H. (1981) 'Sorties'. In E. Marks and I. de Courtivron (eds), *New French Feminisms: An anthology*. New York: Schocken, 90–8.

Claeys, G. (2017) *Dystopia: A natural history: A study of modern despotism, its antecedents, and its literary diffractions*. Oxford: Oxford University Press.

Cohen, B. and Shenk, J. (Directors) (2017) *An Inconvenient Sequel: Truth to power* [film]. Los Angeles: Participant Media.

Davies, S. (Director) (2019) *Climate Change: The facts* [TV episode]. London: BBC Studios.

Deetjen, C. and Ludwig, C. (2021) 'Introduction – Developing students' critical environmental literacies in the ELT classroom'. *Anglistik & Englischunterricht*, 94, 9–24.

Deleuze, G. and Guattari, F. (1987) *A Thousand Plateaus: Capitalism and schizophrenia*. Minneapolis: University of Minnesota Press.

Dörnyei, Z. (2007) *Research Methods in Applied Linguistics*. Oxford: Oxford University Press.

Emmerich, R. (Directo) (2004) *The Day After Tomorrow* [film]. Los Angeles: 20th Century Fox.

Emmett, R.S. and Nye, D.E. (2017) 'The emergence of the environmental humanities'. In R.S. Emmet and D.E. Nye (eds), *The Environmental Humanities: A critical introduction*. Cambridge, MA: MIT Press, 1–21.

Ferreira, A. (2019) 'New bodies, new identities? The negotiation of cloning technologies in young adult fiction'. *NanoEthics*, *13* (3), 245–54. [CrossRef]

Fingleton, S. (Director) (2015) *The Survivalist* [film]. London: The Fyzz Facility.

Fraunhofer, H. (2020) *Biopolitics, Materiality and Meaning in Modern European Drama*. Edinburgh: Edinburgh University Press.

Fraunhofer, H. (2021) 'Spatiotemporality in the Anthropocene: Deleuzoguattarian philosophy, quantum physics, and the German Netflix series *Dark*'. *KronoScope: Journal for the study of time*, *21* (1), 28–44. [CrossRef]

Fraunhofer, H. and Volkmann, L. (in press) 'Transnational eco-pedagogy meets posthumanist philosophy: Staging the climate crisis'. In J.B. Morales and S. Zarabadi (eds), *Towards Posthumanism in Education: Theoretical entanglements*. London: Routledge.

Freire, P. (1994) *Pedagogy of the Oppressed*. New York: Continuum.

Frontpage. (2021) 'Georgia College and German students practice language skills by discussing climate change'. September 22. Accessed 15 September 2023. https://frontpage.gcsu.edu/node/8691.

Grigoryan, A. and King, J.M. (2008) 'Adbusting: Critical media literacy in a multi-skills academic writing lesson'. *English Teaching Forum*, *4*, 2–9. Accessed 6 August 2023. https://americanenglish.state.gov/files/ae/resource_files/08-46-4-b.pdf.

Guggenheim, D. (Director) (2006) *An Inconvenient Truth* [film]. Los Angeles: Participant Media.

Haraway, D.J. (2012) *The Companion Species Manifesto: Dogs, people, and significant otherness*, 6th ed. Chicago: Prickly Paradigm Press.

Helsper, W. (2010) 'Pädagogisches Handeln in den Antinomien der Moderne' [Pedagogical action in the antinomies of modernity]. In H.H. Krüger and W. Helsper (eds), *Einführung in die Grundbegriffe und Grundfragen der Erziehungswissenschaften* [Introduction to the basic concepts and questions in educational science]. Opladen: Budrich, 15–34.

Hill, C. (2012). 'Dystopian novels: What imagined futures tell young readers about the present and future'. In J.A. Hayn and J.S. Kaplan (eds), *Teaching Young Adult Literature Today: Insights, considerations, and perspectives for the classroom teacher*. Lanham: Rowman & Littlefield, 99–115

Hughes, J. (Director) (2020) *David Attenborough: A life on our planet* [TV episode]. Netflix.

Kimmerer, R. (2013) *Braiding Sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants*. Minneapolis: Milkweed Editions.

Kramsch, C. (1993) *Context and Culture in Language Teaching*. Oxford: Oxford University Press.

Küchler, U. (2016) 'Signs, images, and narratives – climate change across languages and cultures'. In S. Siperstein, S. Hall and S. LeMenager (eds), *Teaching Climate Change in the Humanities*. London: Routledge, 153–60.

Lazar, G. (1990) 'Using novels in the language-learning classroom'. *English Language Teaching Journal*, *44* (3), 204–14. [CrossRef]

Lloyd, S. (2008) *The Carbon Diaries 2015*. London: Hodder Children's Books.

McMurtrie, B. (2023) 'Teaching in an age of "militant apathy": Immersive education offers a way to reach students, but can it ever become the norm?'. *The Chronicle of Higher Education*. March 3, pp. 13–19. Accessed 3 February 2023. https://www.chronicle.com/article/teaching-in-an-age-of-militant-apathy.

Miéville, C. (2011). 'Covehithe by China Miéville'. *The Guardian*. April 22. Accessed 1 April 2021. https://www.theguardian.com/books/2011/apr/22/china-mieville-covehithe-short-story.

Miller, B. (Creator and Executive Producer) (2017–present) *The Handmaid's Tale* [TV series]. Beverly Hills, CA: MGM Television.

Mitchell, D. (2014) *The Bone Clocks*. London: Sceptre.

Morizot, B. (2022) *Ways of Being Alive*. Trans. A. Brown. Cambridge: Polity.

Morton, T. (2010) 'Queer ecology'. *PMLA*, *125* (2), 273–82. [CrossRef]

NAAEE (North American Association for Environmental Education). (2019) *State Environmental Literacy Plans: Status report*. Accessed 10 September 2023. https://cdn.naaee.org/sites/default/files/2022-07/naaee_selp_2019_status_report.pdf.

Page, T. (2020) *Placemaking: A new materialist theory of pedagogy*. Edinburgh: Edinburgh University Press.

Pineda Ochoa, S. (Director) (2020) *Endgame 2050* [film]. Houston, TX: Meat Your Future.

Platinga, C. (1997) *Rhetoric and Representation in Nonfiction Film*. New York: Cambridge University Press.

Reggio, G. (Director) (1982) *Koyaanisqatsi: Life out of balance* [film]. San Francisco: American Zoetrope.

Richards, O. (2021) *Climate Change in Simple Spanish: Learn Spanish the fun way with topics that matter*. No place: Olly Richards.

Römhild, R. (in press) 'Nigeria on screen – teaching and learning with documentaries about Nigeria in the digital age'. In F. Matz and K. Stierstorfer (eds), *Teaching Nigeria*. Tuebingen: Narr.

Schlöndorff, V. (Director) (1990). *The Handmaid's Tale* [film]. New York: Cinecom Pictures.

Scoffham, S. (2018) 'Global learning: A catalyst for curriculum change'. *International Journal of Development Education and Global Learning*, *10* (2), 135–46. [CrossRef]

Silverman, D. (Director) (2007) *The Simpsons Movie* [film]. Los Angeles: 20th Century Fox.

Skutnabb-Kangas, T., Maffi, L. and Harmon, D. (2003) *Sharing a World of Difference: The Earth's linguistic, cultural, and biological diversity*. Paris: UNESCO Publishing.

Squarzoni, P. (2014) *Climate Changed: A personal journey through the science*. New York: Abrams ComicArts.

Tabrizi, A. (Director) (2021) *Seaspiracy* [film]. Santa Rosa, CA: AUM Films.

UNESCO (United Nations Educational, Scientific and Cultural Organization). (2017) *Education for Sustainable Development Goals: Learning objectives*. Paris: UNESCO.

Volkmann, L. (2021) 'Internationalisierung der Lehramtsausbildung: Neue Optionen durch digitale Formate' [The internationalization of teacher training: New options through digital formats]. *Zeitschrift für Hochschulentwicklung*, *16* (2), 93–105. [CrossRef]

Von Mossner, A.W. (2014) 'Emotions of consequence? Viewing eco-documentaries from a cognitive perspective'. In A.W. von Mossner (ed.), *Moving Environments: Affect, emotion, ecology, and film*. Waterloo, ON: Wilfrid Laurier University Press, 41–60.

Welsch, W. (1999) 'Transculturality – The puzzling form of cultures today'. In M. Featherstone and S. Lash (eds), *Spaces of Culture: City, nation, world*. London: Sage, 194–213.

Zapf, H. (2012) 'Ecocriticism and cultural ecology'. In M. Middeke, T. Müller, C. Wald and H. Zapf (eds), *English and American Studies*. Stuttgart: J.B. Metzler, 253–8.

Zapf, H. (2022) 'Posthumanism or ecohumanism? Environmental studies in the Anthropocene'. *Journal of Ecohumanism*, *1* (1), 5–17. [CrossRef]

Zeitlin, B. (Director) (2012) *Beasts of the Southern Wild* [film]. Los Angeles: Fox Searchlight Pictures.